

AVIATION WEEK

INCORPORATING AVIATION AND AVIATION NEWS

A MCGRAW-HILL PUBLICATION



HIGH OVERHEAD, through freezing rain or sleet, the modern airliner flies serenely — its propellers completely free of dangerous ice when equipped with automatic, electric de-icing units developed by Hamilton Standard Propellers.

Dependable de-icing is just one of the results of Hamilton Standard's research and development program. Now being carried on with more intensity than ever before, this program is helping to bring greater safety and efficiency to both commercial and military aviation.

HAMILTON STANDARD PROPELLERS

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ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

AIRBORNE



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A new de-icing system
powered by Westinghouse
keeps cockpit windows
free from ice and fog.



Here's an opportunity for you to peek more safety into plane design. A completely automatic de-icing system for cockpit windows...another Westinghouse product that performs a vital function in aviation.

First proof of the outstanding performance of this equipment came from an initial installation on the famous Boeing "Stratojet" plane mentioned above. Then followed similar applications on other Boeing craft already in the air or in the production or design stage.

De-icing is accomplished by applying voltage to the new NESA safety glass developed by the Pittsburgh Plate Glass Company. This glass has

a thin transparent film of electrically conductive material over its entire area. This safety uniform film heating of each window and prevents optical distortion which sometimes occurs in systems using embedded wires or concentrated heat sources. And because Westinghouse furnishes all of the electrical equipment for this new system, you gain the advantage of user responsibility backed by our research and engineering facilities devoted to strength.

For full details on this important advance in de-icing equipment call your local Westinghouse office or write to Westinghouse Electric Corporation, P.O. Box 656, Pittsburgh 30, Pennsylvania.

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ON THE GROUND

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flexible
Tough

-and it's built to beat the heat

triple-silicone-treated **DELTABESTONTM** aircraft wire

When you've got to survive in tight operating heat, you don't need to sacrifice savings in the wire you use — like lightness, flexibility, and toughness. Triple-silicone-treated Deltabeston aircraft wire gives you all three — plus heat bearing service at operating temperatures well above 150°C.

Making all these advantages possible is a new silicone impregnation, applied to two heat-bearing layers of teflon substrate, an aluminum-coated wire braid, and an overall silicone varnish. Far lighter, Deltabeston wire makes maximum use of the weight-saving properties of the new materials, older materials dimensions for all ratings. For just

light, they solve the big handling problem of teflon substrate. For strength, the durability of varnished glass braid.

Made to exceed the ASN-J-C-414 requirements for flame and heat-resistance, triple-silicone-treated Deltabeston will pass a 90.0 kV dielectric test, will stay in service at temperatures above 150°C. Deltabeston aircraft wire is available in sizes from 20 to 4/0.

Write for information on the complete Deltabeston line of aircraft wires. Series YTB-12122, Aerospace and Merchandise Department, General Electric Company, Bridgeport 2, Connecticut.

*Trade mark Reg. U. S. Pat. Off.

GENERAL ELECTRIC

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A Symbol of Progress
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IGNITION SHIELDING



DEVELOPMENT in the rapid advancement in aircraft design and manufacture, Titeflex engineers are constantly striving to improve methods of shielding all types of aircraft engines to meet the requirements of high temperatures and high altitude operation. Related developments for use on jet and turbine power plants include flexible exhaust tubing, new types of pressure gauges, and high temperature indicators.

TITEFLEX has devoted years of research on the development of aircraft ignition shielding and related products. Today, TITEFLEX has become a symbol of the most advanced progress in the aircraft industry and TITEFLEX shielding is specified by most of the major airmen and aircraft engine manufacturers.

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Vol. 47 No. 19

Nov. 10, 1967

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THE AVIATION WEEK

NEW DAY A-COMING—Last year the airlines, or manner of speaking, just had to stand and take it. This year, the situation is somewhat better on the service at least. CAA has authorized use of its instrument landing system at about half a hundred airports and although the debate over the system's effectiveness (which was the big issue last year) still goes on, ELS should be of some help.

The solar ground controlled approach system is in use and working (but still only as a supplemental aid) at Chicago, New York, and Washington. There has been some progress on approach lighting.

With those exceptions, the situation is much like at a year ago. The big developments that are presented to anyone unable, all weather flying are still coming. In their absence, the airlines and other carriers are doing the best within their means. The reduction of traffic between LaGuardia and Newark is a start—if the reduction of 122 flights daily in or out of LaGuardia is adhered to. Once below an altitude fixed, transferred some of its flights to Newark, and other has transferred more flights to LaGuardia, making the last state of that field worse than the first.

ON THE SIDELINES—In some respects the airlines are as much on the sidelines in the liability tangle as are the passengers. Apart from the financial impossibility of the airlines' installing or spending greater lead-ray rods, there is also the regulatory impasse.

CAA determines whether or not a lending aid can be used, regardless of who installs it. Private installation of CAA at several places has not resulted in either CAA noncompliance or reduction of performance as far as we

CAA's authority over landing aids comes with the responsibility for maintaining their stability. Yet, notwithstanding, in the view of some observers, CAA's chances of obtaining sustained funds for landing aid development is rated by the aircraft industry as *slim*.

But this, as far as it went, gave no ammunition to those who claim that the federal government is favoring one mode of transportation over another. Before the President's Air Policy Commission, the Association of American Railroads presented its old argument that, by developing and installing air navigation aids, the government is underwriting one mode of transportation at the expense of another.

That is an argument for which those in aviation have many answers. But it is an argument which those in aviation research has pessimism with a horrendous problem that is not being solved no schedule by the air force researchers of what the requirements are.

RELIABILITY ON TRIAL—The *soldiers'* annual test weather has begun. While the slow-slipping act of Ward Hughes' grant-fishing boat and the subsequent review of the Senate's Hughes investigation captures headlines, the *soldiers'* difficulties with reliability may become the significant, if less dramatic, happening.

be described as mild fall weather on the East Coast—gentlest traffic-generating area in the country—changed suddenly. LaGuardia field hub of much of the air, was virtually closed for three days, re-opened, closed again as a northeaster passed water over the runway and finally opened for limited use that backed up the schedules.

Airlines are switching to "winter schedules"—actually, to flights which, at a hospital, will mean higher load rates on those runs that do so.

Between New York and Washington, most heavily-travelled route in the country, trains are pained. In sleeping and lounge cars, passengers swap stories of the flights that were cancelled or the departure delays they faced for long time they tried to fly.

Winter troubles of arfles are so several & numerous
it was more serious last year than the year before and,
unless alleviated, will be even more serious this year.

IMPACT ON PROFITS—The gambling of the passenger who planned to fly and couldn't is not the most important factor in the reliability situation. The passenger will eventually return to the airlines. But he has a right now, when it is so badly needed.

last winter, according to one estimate, the scheduled airlines lost about \$25,000,000 in revenue due to cancellations. They entered last winter with an overall deficit. On Sept. 30 this year, the airlines had an overall deficit of around \$10,000,000.

A recent report to CAB, one airline suggested that cities it lost last year due to unreliability did not use the airways again until midmorning. More than confirmed an airline is forcing away from cities for short trips—particularly in the New York area—in hour's delay at departure and an hour in a stack at other end is normal procedure. A two-hour flight from trip to a DC 10 from Washington to New York might have 45 minutes) as an example.

Manufacturers put a dam on some financial aid has effect on the manufacturing industry. This was also in the testimony of Donald Douglas when he argued before the President's Air Policy Commission that such a subsidy for the manufacturing industry, too, needed legislation.

Typical of many Wyman-Gordon developments is this complicated light alloy forging used in the wing structure of one of Uncle Sam's latest fighting planes.

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NEWS DIGEST

DOMESTIC

Accelerated service trials of the Convair Lease were expected to begin last week. Testing of the taxpayer's cabin pressurization system was completed early this month, ending the review of components by Civil Aviation Administration engineers.

Ronald H. Pease, Jr., old-time pilot, has joined the Farness, Anderson Aviation Co. as director of domestic sales. He was formerly associated with the Leduc-McGrail Corp., toy airplane manufacturers.

Charles D. Faust, former secretary of the Air Power League, has been appointed executive secretary and assistant treasurer of the National Air Council.

Civil Aviation Board engineer has recommended that Southwest Airways' AM 76 flight certificate be modified in permit scheduling time chart of terminal points. Southwest contends that traffic potential over all parts of its route leg means is not equal so that it is compelled to fly considerable unnecessary and wasteful mileage when required to wait for oil deliveries from end to end.

FINANCIAL

McDonnell Aircraft Corp. reports a net income of \$540,569 equal to \$2.24 per common share for the year ended June 30. This compares with a loss of \$226,114 for the previous year.

National Airlines reports a loss of \$629,431 for the three months ended Sept. 30 compared with a profit of \$377,761 for the same period last year.

Wacoan Commercial Aircraft of Britain has approved a \$700,000 reduction and authorized a change in the capital structure from 30,000 shares of \$1 par value common to 100,000 shares of \$1 par. Wacoan Capital will sign for 17,000 shares with the SEC at par value.

FOREIGN

British Overseas Airways Corporation announced the first British transatlantic service between Croydon and Singapore. The nonstop service will run via New York transports, which will cover the 1,700 mile route in nine and one-half hours. One way fare is \$795 and round trip is \$146. BOAC also announced a new weekly service between London and Malta using Douglas Dakota transports.

Compania Mexicana De Aviacion has placed Douglas DC 4 transports in operation on its daily coast-to-coast service between Mexico City-Tijuana-Mazatlan.

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IN THE AIR: Howard Hughes Flying Boat in flight became airborne over Los Angeles harbor. (A. U. Schmitz photo)

Hughes Answers Senate Probe With First Flying Boat Flight

200-ton, eight engine aircraft answers many questions
in initial test hop over Los Angeles harbor.

By SCHOLAR BANGS

Howard Hughes at 1:40 P.M. on the blustery Sunday afternoon of Nov. 1 lifted his big eight engine flying boat off the waters of Los Angeles harbor after two brief test runs and let it fly for a mile before setting down directly above normal and newspaper concentrations crowding the deck of steamer Earl Carroll's yacht "Vivian."

The flying boat was capable of an indicated speed of 30 mph and at a weight of 276,000 of a designed gross of 300 tons of 400,000 lb. It carried 2,000 gallons of fuel in 14,800 gal tanks. During its first oil and air hop it flew nine in 94 mph. Within the space of these four hours Hughes gave the aircraft industry its first practical "fit for combat" in cost and performance, all page programs of various aircraft. He earned out as quick succession certain questions asked around the world's big gun plane.

A Surface Handling—More than an hour was spent in gradually raising the flying boat, tethered here and off to "set

apart," through a breakwater entrance of the upper harbor to the tailwind member of the outer harbor. But after the two test runs and flight Hughes lowered the boat unaided through the Santa Monica traffic and brought it to anchorage as accurately as if it had been a yacht.

• Towing—The flying boat responded

Boat Specs

Here are exact dimensional specifications of the Hughes Flying Boat:

Overall length 231 ft. 60 in.

Balanced at heel to top of vertical stabilizer 191 ft. 38 in.

Wing span 320 ft. 9 in.

Horizontal stabilizer span 30 ft. 11 in.

Root chord 51 ft. 91 in.

Tip chord 19 ft. 75 in.

Wing root thickness 11 ft. 5 in.

quickly, no rudder and surfaces at both low and high speeds. No rudder had ever been used, even when the left wingtip position was altered to droop the wings during one high speed run. There was no evident lessening of control when Hughes at one time had to veer sharply to avoid a right-coming water hen.

• Takeoff—the boat climbed quickly out of the water and onto its step, without surging or lurching. Despite choppy patches of the water, boat spray hitting well below the propeller line, and at speed developed the spray took an apparent course as if it had come from a smooth wake left by the hull. There was no porpoising. The boat broke steadily clear of the water without my apparent absence of trees.

• Landing—Stability of the flying boat upon contact was such that crew members were not aware immediately that they had landed.

• Control—Response of the plane in the form of all control surfaces, and quick response in operating controls on the cabin, were attended by Hughes' willingness to take it into the air after the initial preliminary tow run.

The plane was tested with hydraulic control boost cylinders, originally grouped close to either control, hydraulic valves actuated by cabin floor cabin controls. It was this reasoning of the control hydraulic system, to eliminate deflected action and ranging that permitted the taking of the Hughes boat months earlier.

Hull Ingenuity—Prior to launching, the flying boat was water tested in its growing dock. During Nov. 2 preflight testing the hull was subjected to choppy waves, but shaft development whirred, and on two occasions the hull was suspended from the launching bar. After moments of concern, engineers noted that only "a few" parts of water had entered the hull. They believed that irresponsible minor leaks would not be a problem.

Such were the immediate anxieties of all who watched the test, including Army and Navy expert E. F. Hartman, engineer-in-charge of Hughes representative of NASA at Los Angeles, and engineers of almost every aircraft manufacturer in Southern California, who viewed the event from a height of yachts breaking the surface.

Riding in the flying boat was George Holloman, chief of the aircraft and components section of CAA Region Six, is greatly supported by a committee of Army, Navy, NASA, CAA and Reconstruction Finance Corp. to serve as a technical adviser of all tests at the Hughes craft.

Tests Next Year—First flight tests probably will not be made until early next year. Before his unexpected layoff, Hughes had said that he did not intend to begin flights before next March or April. There is no apparent question in the minds of either Hughes or his engineering staff that the boat will perform adequately in flight next year.

Craft operators during the ensuing months will test its behavior in high-speed landing or levels not increased, and in the plane's total water carrying ratios of gravity, ranging from 18 to 34 percent of the load. During the Nov. 2 run the C.G. was located well to the rear, at about 38 percent, to create a

condition that would maximize any porpoising tendency. During surface tests, however, the hull will be shifted in small increments until the full range of C.G. travel has been proved out.

Hughes Predictor—In this initial stage of development, dynamic stability could be tested to predict the stability of Hughes, who has run thousands of landing tests with his Sikorsky S-55 in studies of load balance characteristics. A week prior to the Nov. 2 trials, Hughes shot 125 landings in one afternoon with his Sikorsky on the Colorado River between Parfait Dunes in furtherance of these studies.

At this program, basic attention will be paid to the drag characteristics of the big boat. Hughes engineers decline to reveal the overall drag coefficient other than to say that it is a remarkable low, and that the hull will be the least drag ever developed into a flying boat. One test will be held April 15, which will be the last continuously live drag, relatively, thus that of a DC-3.

Direct indications of the flying boat's low drag is that model tests indicate that in sailing at anchor it will exert a pull of set weight more than 3,000 lb. at a 70 mph wind. However, as a side ground effect shock lurch or wave wave, the mean swimming speed in the hull nose has been designed to exceed 30,000 ft per min.

Low Drag Characteristics—As in the hull design, the wing has been developed with emphasis upon low drag characteristics, and efficiency displayed under varying conditions of load, wind, and airspeed. The primary planform is non-parabolic or laminar flying boats. The Hughes boat wing has an aspect ratio of 9, and root and tip chords of 30 and 20 ft. produce a mean aerodynamic chord of 40 ft.

Particular interest was shown at the builder's ability to come out with an apparently perfect balance, and at another

the boat rode with portions undamaged above water. Instant also removed over the beam effect of the hull, and the fact that even under strong wind gusts a strong boat stability was evident.

A fine haulout with Hughes was his final comment on the launching.

There was a feeling of surprise that the boat "left light" he could lift it off, if far no other means than to be able to go before Senator Brewster with a pat reply to all who might have planned surface attack, as the spending of millions on a "conception that hasn't even flown."

Remove Flares

Public hearings on the crash of a United Airlines DC-6 near Sioux City Airport failed to all 17 persons aboard, opened last week at Friscoch, Utah, as the Civil Aviation Board ordered action to remove parasite flares from other DC-6's. The flares are carried to illustrate emergency right landings.

On the same crash investigation indicated that the fire in the United DC-6 was confined to the right side of the plane in an area including the aft luggage compartment and the wing root trailing edge. Investigation reported that the wing was burned well out on the flap.

Parasite flares are carried on the wing root section. The CAB general order noted that the flares "have been contributed substantially to the causality of the fire" on the United DC-6. It has not yet been determined whether the flares were the primary cause of the fire or were an off as a result of combustion elsewhere.



Flying The Novel Beech Twin-Quad

Radial features of Beech Aircraft Corp.'s 20-passenger transport, now undergoing flight tests at Wichita, are plainly apparent in the latest photographs of the four-engine, two-propeller transport.

The company claims four "firsts" for the plane: first airplane to be equipped with engine completely advanced in the wings; first to combine four engines with two propellers; first to have integral emergency landing tools on the fuselage; and first large airplane to have a V tail.

As a result of these features, original or not, the Twin-Quad appears to give excellent passenger visibility (indicated in a highwing design) and has aerodynamic cleanliness largely due to the stored powerplant installation. The leading edge on each side of the fuselage give the underside a rounded appearance, although in reality the floor of the cabin is flat.

Beech is still not elaborating on specifications or performance of the plane. Original plans, however, called for using four Lycoming engines normally rated at 325 hp and developing 375 hp for

take-off. These are flat, eight-cylinder engines arranged in pairs spanning the wings and drive the propellers through special gears. Large, slow-turning propellers reduce the noise of the plane and also contribute to propeller efficiency.

Beech is stressing the utility of the Twin-Quad for operations from small fields and at one time calculated that take off distance at sea level over a 30

ft. obstacle with one engine set would be 2,600 ft.

The V tail of the Twin-Quad has a more acute angle than that between the two tails of the Bonanza. Beech's four-place parasol plane, the first production airplane with the butterfly empennage, began its transatlantic flight around 1947.



OFFICIAL LAUNCHING Observers were pleased when the Hughes Flying Boat was launched for its first test. (S. P. Photo)

Improved Protective Design Offers Lightplane Safety Hope

Crash injury research cites benefits from devices already available; plugs for more.

An important future reduction in air accident deaths and fatalities appears likely if the present research program toward improved structural protective design for transports or plane crashes rated in several categories can succeed.

Behind the engineering trend is a small but growing system of detailed accident injury reporting and analysis at the NASAAC meeting and its counterparts by federal aviation agencies, makes it likely that the new database for more complete coverage of these accidents will be available soon after the sources from now exist.

These safety design trends, Dohmen believes, should include such items as a "disk-shaped" safety wheel, a single seat belt, and a device to search crash impact centers.

Designing more standard members throughout the cabin, so that any powerful bending force will cause the brittle outward, move from the occupants.

Increasing distance between plane occupants and the nose of the plane so that the impact of a crash will be absorbed by collapse of the forward structure.

Design of instrument panels as integral structures, so that impact members which can be deformed during a crash will not damage the controls or other sensitive systems. Dohmen notes that a small part of such metal which bends with his own hand as a point of his thumb.

Dohmen is discouraged about the apparent pilot negligence that should have been. Although private pilots recently proved their efficiency in preventing head impact in minor crashes and al-



NEW METHOD OF TOWING

Use of a low load weight has as a replacement for a tow rope is demonstrated by this CG-172A glider shown being towed by a Cessna 180 tow plane. The system is now undergoing tests at Wright Field. (From Avia. Photo)

though many thousands of aviation people saw it demonstrated graphically at the National Air Races last September, when Jack Harbinson, of Arcadia, Calif., unfastened his shoulder harness and shot out of a P-51 with only a bullet hole close, credits pilot error for new aeronautical safety. It should be continually noted, however, that after this as a crash emergency, to stop so put it on. Pilots generally complain about the restrictive nature of the harness.

Nord-Cessna Panel—The panel which I test shoulder harness to produce his lead, Dohmen thinks the designer should do it with a metallic cushion panel, plus a safety design wheel, and a double strength safety belt, anchored to the primary structure of the airplane so it won't give way under ordinary crash impact.

The "disk-shaped" overall safety wheel introduced more than a year ago is becoming the general model on most planes. Dohmen cautions, although some manufacturers have not caught up with the practice. Theory is that the wheel fits the slope of the chest of the pilot, or front seat passenger. It is made of durable metal which bends under stress without shattering, and carries no excellent shock protector. This is more than a theory. Recent accident reports have shown the protective value of the wheel in cases where such hits were anticipated in the design.

Dohmen thinks that the safety wheel design could go far in cutting some sort of a locking force or brake the pilot to prevent his being thrown forward. This might take the form of a locking bar which would make lack the ability to hold the position in a crash. The column could be designed so that it would break with a locking position, in the event of a crash. There is, reportedly, some CAA research on gaining objections to the locking device.

Pilotless Crash—The research director, a World War I military pilot, has turned to flying in a private plane, after years on the ground, in order to make more personal checks of his theories. He began his early studies for the Army and Navy under Research Council projects during World War II. He believes that coupled with all the anti-crash protection that can be designed into the passenger plane, there will come down handling quality which will make my crash in just less severe.

He works by philosophy. "We will never be able to design an airplane which is incapable of crashing, we have the automobile designer on the building of an off-the-vehicle basic ability to do something else." What we must work for is to design airplanes for safety's sake."

Republic Gets New Order For 130 P-84s

Republic Aviation Corp.'s new \$15,000,000 order for 130 model P-84 Thunderjet fighters brings to a total of seven the number of fighter groups slated for formation using the sleek jet craft. Formation of the 14th fighter group, for Thunderjet operational unit has been completed and 50 of the 140 fighters are now located at Drew Field, Tampa, Fla.

Repulse is now well under way on the construction of the first Thunderjet order for 130 at a cost of about \$35,000,000. The second additional order covering the last 100 is on for more than \$50,000,000 and scheduled for completion until Jan. 30, 1948 and leaves the Republic building to \$75,000,000.

The new order enters the P-84 of first rank importance in the new all-jet Air Force by replacing the Lockheed P-80 production on which a stand to types off next spring. Although the P-84 is considerably heavier than the P-80, it is about 10 percent faster. The sidetotal speed is given as the same 410 mph. It starts climb through the use of a four-bladed variable wing and control surfaces to facilitate fast.

Sold Out—On the announcement of the new contract, the Air Force revealed that the P-80 is now sold out abroad. Having computed the loss of intermediate funds, Dohmen claims, he stated by Lt. Col. William A. Kring, Air Materiel command test pilot, about 75,000 rounds of .90 caliber munitions were fired—a maximum of 10,000 rounds per gun. The Thunderjet guns are a new type with a rate-of-fire of 1,200 rounds per minute, 90 per cent faster than the standard World War II service machine gun.

Brewster Skeptical on Cost Plus Air Mail Payments

Major S. S. Owen Brewster (R), director of the transportation subcommittee of the post Contractual Air Policy Committee, feels skeptically of the proposed pay-as-you-go rate for mail contractors that plan to profitably profit pay-as-you-go carriers for mail carrying is questionable. From a public viewpoint, Brewster doubts the feasibility of setting a cost-plus reasonable profit rate, since "the expense on what should be is included in cost" a carrier on which there is great difference of opinion."

Brewster has proposed a 25 cents per ton mile rate subject to change by reference to costs during hearings of his subcommittee he has invited to examine



NASAO ELECTS CORNELL

Charles F. Cornell, center, newsmen director of Indiana, was elected president of the National Association of State Aviation Officials, at the Ft. Worth convention, succeeding Lincoln L. Schreiter, Missouri secretary director. Also new officers pictured from left: H. E. Wiley, Montana, vice president; E. F. Keppig, Wisconsin, assistant treasurer; C. E. A. Irwin, Ohio, vice president; and William E. Larson, Florida, two president.

IAM-UAW Vie For Aircraft Workers

Inclusive competition for union members among defense employees is the face of reduced postwar employment conditions in industry. Both sides of a state negotiating 75 units could be in line with current plans for commercial flight developments. Would give 44 cents per ton mile. It would give all air carriers in the industry claim—the lowest average rate now paid in an air carrier is Illinois' average of 44.55 cents per ton mile. Payment to the 20 domestic bus lines averages 48 cents, and to the feeder lines, 52.49 cents.

More Pilots

United States Air Force has opted its pilot training plans from the present 1,000-per-rate ratio to at least 3,000 per rate during 1948 with the first 20,000 graduate scheduled for commissioning in 1949. The expansion program is required to meet the USAF's 70,000-strong program. By mid-1945 a total of 17,000 enlisted men and 65,000 officers emerged to train 35 per cent.

To meet the new quota, pilot training programs are being strengthened and new aviators under test now may be taken at 55 years U.S. birth through the recruits. Basic requirement is that the applicant be an unmarried male between 20 and 35 years of age have completed two years of college or pass an equivalent examination.

The U.S. now finished ahead of NLRB, 2,779 rates to 1,965, as in NLRB elections. About 22,000 units 105 of the 61 challenged ballots to obtain a majority. These were 965 who voted for no union. NLRB has refused to examine the disputed ballots pending a decision by UAW-CIO as to whether it will comply with the new labor law.

NLRB Reverses—UAW-CIO risk loss of members and bargaining rights at this and other defense plants unless it ends



PIONEER IN FLIGHT

New light photo of the Northrop Pioneer prototype which is undergoing extensive redesign for production in three different versions for Arctic rescue work; for small transport operations and standard cargo carrying functions.

an boycott of NLRB. Its ability to negotiate with the IAM will suffer dramatically, in at Consolidated Vultee in San Diego, where the UAW CIO's position is that the IAM has deserted.

Cy Hallinan, UAW CIO West Coast regional director, has warned the union that he would not let one of all members in the sheet metal industry, Ford Motor, negotiate directly with Detroit after NLRB could not meet on a complaint filed by them soon, UAW-CIO.

H Industrial Services H and H Associates Co. at Long Island City, for example, 61 discharged strikers had to file individual suits for reinstatement after NLRB could not meet on a complaint filed by them soon, UAW-CIO.

President Walter P. Reuther has promised to build up the union's air craft department to a major status. The union took more than \$250,000 in air craft actions during the last year after the war.

Unless it qualifies under the law, however, the UAW CIO can hardly "build up" its aircraft activities. Encyclopedias of production and related workers' unions now show a figure down to 302,000, according to Aircraft Industries Association. This is only a small fraction of the 1944 wartime total.

Program Is Set For Aviation Clinic

Approximately 700 advance reservations were reported last week at pre-opening meetings for the National Aviation Clinic to be held at the Indiana State Capitol, Springfield, Ill., Nov. 19 to 22, soon coming completion.

At its peak years when it met in Oklahoma City, the 1947 Clinic is planned as a meeting board for all aviation interests, and will include 58 official representatives from a widely divergent group of aviation and public-interest organizations. However, this year the Clinic sessions will be conducted in one or two houses simultaneously, with 18 lots of aviation policy, already scheduled, represented, debate, committee action, and other activities. Other bills will be presented in the other committee fit possible schedules.

Recognized in Parade—Arthur J. Roseman, Des Moines, president of National Aeronautic Association and Gov. Dwight D. Green of Illinois, are co-general chairmen of the Clinic. Other Clinic officers are Lowell H. Stevens, NASA executive vice president, and vice chairman of the Clinic; Robert DeWey, Illinois state aeronautics director; Clinic treasurer, R. M. Phelps; Clinic director and Robert B. Marquardt, Air Transport Association executive vice president, logistics, are present.

Frequently, UAW-CIO is also presented from negotiating union shop contracts and deals signed to agree-on factors, as at Glendale, Calif., of the IAM, already dissolved in the air craft industry.

IAM claims maintained with South, Boeing, Census, Consolidated Vultee, Kaiser, Douglas, Globe, Lockheed and McDonnell, UAW-CIO's major agreements are with North American, Convair-Wright, Glenn L. Martin and Bell

signature of a comprehensive national air policy."

► **Pilot Speakers-**Set speeches to be made at the Clinic will be held to a maximum, with an overall objective of giving each official delegate maximum time to express his views, and state supporting facts.

L. Walsh, Roger, executive past president of NAA, and former CAB chairman, will speak. Dr. James C. Clark, and Guy Green will concern the Clinic. Wesley E. Kehler of Minot, N. D., a chairman of the Clinic rules committee, which will pen on much of the program.

Ten general subjects will be considered as a basis of a host of policies at the Clinic, including air transportation by commercial carriers as scheduled service, civilian flying (including everything except flying services for basic aviation education and safety), air defense and national security, aviation regulation and legislation, aviation economics, aviation manufacturing, aviation ground and air service facilities, international aviation relations, general public aviation and goodwill, and research and development.

XC-99 Test

Conair's XC-99, world's largest land based transport, was to begin formal tree tests last Thursday, and first flight was set for Sunday, Nov. 23. The big plane was needed under the power of four of its six engines at Louisville, Ky., for engine warming prior Nov. 1.



RAIN FROM THY ICE

Inspecting the cutting head of a dry ice shaver and distributor used in cloud seeding are G. S. Barnes, designer of the equipment, and Fred Berenson, both of the Range Developing Co., Phoenix, Ariz. Dry ice is used in the upper atmosphere to seed clouds to form the rain clouds they are placed with precipitation induced by a rotary blade.

LETTERS

NOTAMS Complaint

To the Editor:

Mr. W. S. Lewis' letter in Aviation Week, Sept. 15, concerning "Notable Notes" in Aviation Week, is the best.

The charts published in the former NOTAMS were invaluable to cross-country flying as up-to-date facility fatigue was the only way. Pilot flying alone cannot have a reference sheet consisting of last trips, book series of NOTAMS, etc., at the top of cockpit or in a new or lone passenger airplane.

NUTAMS were one of the few helpful rather than restrictive FAA functions. With its discontinuation CAA's trend to limit flying solo is further increased along with insulation in emergencies, weather route finding and other flight regulations.

With Mr. Lewis, we hope the voice of those interested in aviation and private flying will be strong enough to move our government to provide the service for which we pray.

J. G. SCHWARTZHAAR, President
U. S. Pilots, Inc.
Franklin, Ga.

Cross Country Training

To the Editor:

Having only recently received my commission as assistant to Ohio's Director of Aviation

train, I well wish forever your article September 19 as a guide reading.

While I have to give full credit to Charles Conrad of CAA for the many valuable contributions he has made to the field of aviation and lot of the personal pilot, I am loath to give Mr. Lewis all the credit for the "experimental" flight training program now being conducted at Ohio University, Athens. I remember so well the long struggle of C. E. A. Brown, Ohio's Director of Aviation, in getting the powers and authority to conduct flight training involving private aviation on cross-country flying and less on the academics as order to produce a safer, more, more competent pilot pilot. After many months of trying to interest universities in Ohio, Mr. Brown finally sold Ohio University on the idea of flight training.

I also sold the principal aviation section and regional personnel of CAA as agreeing to it. Last, but possibly most important, he has extracted George W. Burgess, chief flight instructor of CAA, in the event that Mr. Burgess is unable to continue the program at Ohio University. I am deeply grateful to Mr. Brown's vision. Mr. Brown has added much in order that he might direct the program with the much-needed flying advocacy committee at its meeting this month, and at the meeting of regional CAA subsections in November, in my making of the NAAAC meeting at Fort Worth.

As Director of Aviation for Ohio, Mr. Brown gives to the industry the benefit of his many years in private and commercial aviation and a wealth of knowledge gained from his years as "probably the best controller in navigation and ground school subjects in those parts."

James H. MacLean, Jr.,
Columbus, Ohio.

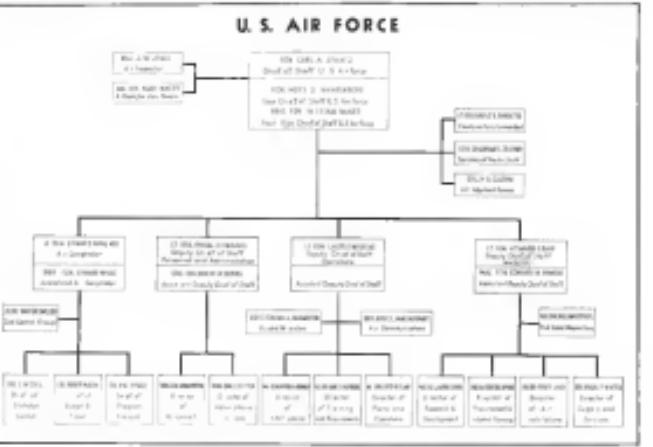
Airport Rule Challenged By Buffalo Distributor

Objections to the rule set by airport director Nathaniel E. Dally, bearing plates without radio equipment fastened to the Buffalo Airport were raised by F. Leslie Mandel, president of the Buffalo Aeronautical Co., before the Airport Advisory Board.

Mandel said the ruling will keep hundreds of small planes out of the Buffalo Airport. He emphasized that the light plates installed at the airport are adequate for planes taking side cargo.

Cargo Terminal Sold

Continuation of independent cargo facilities at Detroit Air freight Terminal, Wayne County Airport, has been assured with sale of the company to a new group headed by Richard D. Brooks and Howard P. Smith, Jr. The seller denied the threat of termination of the terminal service from the announcement by National Air freight Facilities that it would cease operations



Five Men Are Named To California Commission

Gov. Earl Warren of California has announced appointment of the five members of the California Aviation Commission, a group set up by the legislature of the state legislature.

The commission is empowered to choose a \$7,000-a-year director of aviation for the state.

Named to the commission were John Felice Taver, Orland, chairman of the aviation committee of the Orange Chamber of Commerce; David G. Olson, San Diego, recipient in the pendant of Congressional Valley, Norman Lamm, Redbank, owner of Pacific Aircraft Sales Co. and president of the California Aviation Trade Assoc.; Fred D. Tapp Jr., president of the University of Southern California and former national director of the Air Law Institute; Chiray, and T. Bruce Church, Sulphur ranch owner who holds a pilot's license and makes extensive use of air transport in marketing his vegetable products.

INDUSTRY OBSERVER

- Northrop Pioneer will make a nationwide tour in December. New three-blade propellers are to be installed shortly to further increase performance. The trimotor design will takeoff on two engines and fly on a single engine. Design studies and engineering have been completed on final and old versions.
- Curtiss Wright XP-57, Air Force "J-1" fighter, will be moved from the C.W. Columbus, Ohio plant to MacCoy, Calif. Although the plant runway is adequate for a takeoff and Wright Field is only 60 miles away Air Force and company engineers chose to delay the first flight until the Earle runway at MacCoy can be used.
- Douglas Aircraft Co., Inc. does not anticipate any further orders for the DC-6 transport from domestic airlines, although sales efforts will continue should Donald Douglas believe that some form of institutional financing will be required to cover further DC-6 sales as ordered. Total orders to date are about 140 and with the "bantam" figure to date Douglas anticipates a \$30,000,000 loss on the project.
- Navy has taken delivery on the first Paveletta twin engine helicopter. During the delivery demonstration at Philadelphia five men clutched a rope ladder from the ground to the helicopter hovering at an altitude of 40 ft. Purpose was to test helicopter's utility for rescues at sea.
- McDonnell Aircraft Corp. is working on a design study for night powered helicopters blades.
- Donald Douglas referred to the President's Air Policy Committee that has plan to launch the DC-6, made several months before V-J day, were based largely on an Air Force statement that no C-54 transports would be declared war planes until at least one year after the end of the war. The AAF surplus declaration of C-54's shortly after V-J day made little impact on the DC-6 sales program and has resulted in a large financial loss on the project.
- The \$60,000 Berlin Verlens winged missile, which recently failed to reach moon status before plunging into the ocean, was the second orbital attempt, the first having been made some months ago. The first was foiled as the launching apparatus and struck the point Montrouge in the belly before impacting into the ocean.
- French engineers like the engine arrangement on the Tern-Qualif transport so well, they may try a similar two-engine one propeller arrangement with two 15 hp engines on experimental version of the fast plane Breguet, which now has one engine of 165 hp.
- Tandem linked aileron and rudder control surfaces in new personal planes. Latest plane designed so that it can be flown with either hand or feet, is the four-place Lorraine Shrike series.
- Engineering recommendations of the Crash Injury Research Organization are being studied with increased interest by lightplane manufacturers, were reports of two victims of 105 mph planes at centerline impact, in which safety design wheels and a folding door and front seat were important factors in enabling the occupant to escape with only minor injuries.
- Boeing Airway has been given CAA approval to make ILS approaches at all airports on its routes where IBS is operational with 200 ft. ceiling and one-half mile visibility. This represents much better ILS minimums as far as CAA is concerned. The same minimums will be available for other airports as soon as their gain sufficient operational experience with ILS.
- Howard Hughes' XF-11 photo reconnaissance plane has completed plane out test at MacCoy and has been turned over to the Air Force for its own plane test. A Phifer spokesman told Aviation Week that the plane had exceeded Hughes' guaranteed performance in many respects.

AVIATION CALENDAR

- Sep. 18. Federal & Other Trade Commissions—Whitman.
Sep. 18. National Trade Commissions—Wheeler.
Sep. 19. National Aviation Trade Association—Annual meeting—Chicago, Ill.
Sep. 19-20. Air Power—Military Aviation Conference—Washington, D.C.
Sep. 19-21. Air Transport Association—Annual meeting—Chicago, Ill.
Sep. 19-22. American Society of Manned Space Flight—Washington, D.C.
Sep. 20. American Astronautics Association—Annual meeting—Los Angeles.
Sep. 20-21. All-American Airlines—annual meeting—Wichita, Kan.
Sep. 21-22. American Association of Medical Researches—New York.
Sep. 21-22. American Consulting Engineers Council—Annual meeting—Washington, D.C.
Sep. 21-22. American Institute of Architects—Annual meeting—Chicago, Ill.
Sep. 21-22. American Medical Bombers—Glenview, Ill.
Sep. 21-22. All-American Airlines—annual meeting—Wichita, Kan.
Sep. 22. RAND Airlines—annual meeting—Montreal, Que.
Sep. 22-23. American Consulting Engineers Council—Annual meeting—Washington, D.C.
Sep. 23-24. CAA—international conference on aircraft noise—Washington, D.C.
Sep. 23-24. 10th Annual meeting—American Astronautics Association—Washington, D.C.
Sep. 24. American Model Builders—Boston, Mass.
Sep. 24-25. All-American Airlines—annual meeting—Wichita, Kan.
Sep. 25. RAND Airlines—annual meeting—Montreal, Que.
Sep. 25-26. CAA—international meeting—Washington, D.C.
Sep. 26-27. 10th Annual meeting—American Astronautics Association—Washington, D.C.
Sep. 27-28. American Consulting Engineers Council—Annual meeting—Montreal, Que.



* THE DANGER LINE for piston day high speed aircraft has been the speed at which the plane enters the aeroelastic shock-wave pattern—a speed which varies with altitude. An important part of Kollsman's development program for the past several years has been instrumentation for high speed subsonic and supersonic flight. Among the developments is the new Kollsman Mach Air Speed Indicator. The hand and pointer moving over the dial of this indicator reports critical speed as it changes with altitude and thus gives the pilot constant warning of the point at which the plane will enter the dangerous compressibility pattern. Operating speed is indicated by means of the white pointer on the same dial. The relationship of operating speed to the critical speed is, therefore, clearly apparent at all altitudes. On the mechanism which actuates the red pointer, settings are provided both for the proper Mach Number and the maximum operational speed for the particular design of aircraft being flown.

KOLLMAN AIRCRAFT INSTRUMENTS

PRODUCT OF

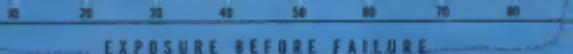


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ENGINEERING & PRODUCTION

Douglas Forecast of Transport Market Renews DC-9 Speculation

Potential sales put at 30-90 four-engine and 310-400 twin-engine planes, with estimate that 360 "DC-3 replacements" will be in use in 1950.

By WILLIAM KRIGER

With an estimate of a combined domestic and export market for transport aircraft in the next few years in excess of only \$8-93 four-engine and 260-490 twin-engine planes, about present orders, Donald W. Douglas has turned eyes of industry speculators both to his own company's plans and the future of transport plane projects and production.

In a discussion of the market outlook and the problems of commercial plane sales, prepared for the Press Club, Mr. Polk Commissioner, Douglas pointed out that the number of planes could represent a very large order for new manufacturers. But as the industry is presently constituted such an order would be split among five to eight manufacturers.¹

► **No Profits.** On such a basis, it is obvious from Douglas' viewpoint, no manufacturer could produce at a profit. According to the president of the company, but has been the principal supplier of aircraft interiors, the DC-6 to date has cost more than \$42,000,000 in costs of aircraft removed from the delivery of about 300 planes. The first 100 cost about \$100,000 each, while the last 200 cost \$10,000 each. Douglas' profit margin is 1%.

That indicates, looking on the part of the Douglas side of the company, the company can make a percentage loss on delivery of present plane stocks. DC-6s after delivery or still on order totaling less than 130. Douglas' 40-90 plane partners would still leave his company some 30 planes short of the balance point.

► **Causes.** Situation is varying depending on the same situation pertinent to every other transport plane manufacturer, particularly in the transoceanic field. The basic idea, however, is that an order, distributed by Douglas to the contractors plus Consolidated Vultee, is frozen to the last minute, totaling 177 Convair 340s on order, 137 with Martin delivered, 100 with Martin delivered, 100-24-36 and 30-36. Both manufacturers, of course, have estimated they must each sell about 300

plane developments. Douglas estimates that there will be 400-450 Air Force planes required to be delivered to the Air Force throughout the world in 1950 but total of 300 Convair 340s, 2-6-2s and 14-16-45 more than he has shown as order as Sept. 1. But total under the category of "DC-3 replacements" is a total of 360 planes. The Douglas company does not regard the Convair or Martin planes as DC-3 replacements, but it does so claim its own projected DC-9 (AVIATION WEEK, Aug. 14).

While that may be the tip-off that Douglas has decided to go ahead with the DC-9, in another part of his statement he cites a good reason for not following through. "According to statistics," said Douglas, "it requires 35,000,000 to build a prototype DC-9 replacement, but to get the first 100 airplanes in the program means an additional cost of \$27,500,000 per airplane, and the first 100 could be satisfied with \$10,000 worth of development cost which brings the price to a level too high to sell."

Assuming 700 as today's maximum sales potential for a new model, spread of a DC-3 replacement, Cessna would amount to \$25,000 per seplane. North American's sales approach \$90 of 3,000 airplanes class the span of \$75,000,000 directly to a tolerable portion of the total cost.²

Transport Line-Up

Donald Douglas, in his statement to the President's Air Policy Commission, gave the following figures on new transports either delivered or still on order as of Sept. 1:

Strong (all on order): 55 Stratocruisers, 48 for international and domestic service, seven for domestic service.

Convair (all on order): 177 Liners, 61 for international and domestic service, 115 for domestic service.

Douglas (all DC-6 delivered, 20 for international and foreign service, 44 for domestic service, 72 on order, 46 for international and foreign service, 24 for domestic service).

Lockheed: 87 Constellations delivered, 87 for international and foreign service, 27 for domestic service, 13 on order, 12 for international and foreign service, one for domestic service (Delta).

Martin (all on order): 109 24-2s and 30-36, 30 for international and foreign service, 59 for domestic service (Delta).

For the first nine months of the current fiscal year, Douglas has had less than \$3,170,015 after provision for tax carry-back credits. The firm profited from \$103,339 in the first quarter to \$443,190 in the second quarter. Third quar-

ter loss was lower, \$412,730. This covers operations up to Aug. 31 at which time, according to the debt submitted to the Air Policy Commission, 64 INC has been defensed. For the final three months of the fiscal year, deferrals should total along \$9 more expenses.

► **Greater Latin American**—the method, due to increased costs, probably has changed greatly since Douglas emerged as a concern last spring. According to his annual report in the third quarter report, he estimates that the first quarter may exceed the loss.

For the first nine months, Douglas will again show \$10,363,000, an increase over the similar period of 1944, although the company has now recorded profit at \$1,454,142. Backlog declined to \$136,487,000 at the end of the third quarter from \$153,839,000 three months earlier.

The drop in backlog results from production stripplanning sales, a condition that prevailed for Douglas in the second quarter also, although it was more degree. While third quarter deliveries totaled \$43,034,000, new orders less cancellations amounted to \$29,462,000. In the second quarter new business was up, \$1,854,000, and deliveries \$18,551,000.

Boeing Schedules

26 Planes By Jan. 1

Boeing Aircraft Co. has established a production schedule calling for those YG-37As, three Stratoformers and 20 additional B-57s to come out the factory door by Jan. 1, according to H. F. Brown, vice president in charge of production manufacturing.

More than 2,900 workers have been added to the payroll in the past month, bringing the total payroll above 15,000.

The 30th B-57, recently delivered, is expected to make its first flight before mid-November. On low speed two runs the jet bomber has gone just through a series of sharp "S" turns to lose less than the accustomed number, landing gear would stand up under punishing run, and to check design criteria of the nitrogen tanks.

"We found that neither these wing tip cleaners will be critical factors," said Bob Robbie, test pilot. "The wing tips remained well above 18 in off the ground and the gear stand stood up beautifully."

The two turbosuper engines have been run three and a half hours each, and the four turbines two hours each. Test evaluations in the place of two were completed in the last week.

One additional task was the fitting of a single pitot bottle, which proved difficult as an temperature problem associated with its operation. Before flight from base to site pitot units will be fitted simultaneously.



Navy Contracts With Kaman For Copter Development

Navy interests in helicopter development of the Korean Aircraft Co. has increased to a \$15,000 contract by the Navy's Bureau of Aeronautics calling for design data, construction test, stress analysis and engineering reports of the Kaman rotor and control system developed and flown in the Corporation's experimental model K-125A helicopter. Work on this contract is al-

most under way at the firm's Bradlees Field plant.

A twin-blade plain control development of the K-190 A has progressed to the point where flight tests are scheduled for late next month. The K-190 A is powered by a 135-hp Lycoming engine, carries 12 gal of fuel and has a range of 180 mi. High speed is 100 mph, and cruising speed is 80 mph. Gross weight is 2,180 lb., outer diameter is 38 ft., and the fuselage is steel tubing covered with a metal skin, wheel track is 5 ft. 5 in.

Fairchild's Process Licensed to National

National Biscuit and Almondine Co. has acquired a license from Fairchild Engine & Airplane Corp. for the use of its Al fa process for baking aluminum or almond cookies in steel and iron trays.

The Al fa process makes possible the fabrication of the metal containers enclosing the strength of steel with the light weight, high heat conductivity, excellent bearing qualities and insulation qualities of aluminum.

The Cleveland Biscuit intends to use the process in making its specific product. Steel baked aluminum trays, bearings and bearings, aluminum non-greasable bonded in steel, balls melted and formed cylinder barrels, fused ball exchanges, as well as aluminum coating of steel pipe for baking for corrosion prevention.

Dutch Inventor Designs Helicopter To Loop

A thin rotor helicopter capable of flying and looping has been designed by D. Van Dyk of Rotterdam. At present

he is seeking financial assistance to construct a prototype in the Netherlands. Van Dyk has applied for a patent on the stabilometer system, which he claims is the key to the novel characteristics but details have not been disclosed.

The design calls for a two-place helicopter, but the inventor has plans for a four-place and possibly a six-place craft. The two place, to be designated the HVD 101, could be constructed in the Netherlands within five months at a cost below the price of imported helicopter, he estimates.

According to present plans, the HVD 101 would have a maximum speed of about 100 mph, and would cruise at about 104 mph. Range would be about 150 mi. Useful load would be about 700 lb. and fuel capacity about 2,000 lb. It would be powered by a 60-hp engine.

Continental Reports Loss

Continental Motors Corp. reports net loss of \$54,779 after application of estimated tax refund for the quarter ending July 31. G. J. Remo, president, stated operating losses have been on profitable basis, which should increase. First half losses totalled \$635,209.



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Perbunan Company, Inc., 15 West 51st Street, New York 25, N. Y.; First Central Tower, 180 South Main Street, Akron 3, Ohio; 225 North Lakeview St., Chicago 1, Illinois; 319 Stuart Street, Tuxedo 17, Massachusetts; 1000 Grand Renaissance, El. M. Royal Dr., Los Angeles 34, Avenue, Los Angeles 15, California; Worcester 20-2100, Elizabeth, New Jersey; Los Angeles, California; Chicago, Illinois; Akron, Ohio; and Tucson, Arizona.

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The spot the cord enters the electric iron is where a rubber bushing takes a beating! It must withstand intense heat . . . constant flexing . . . moisture from steam iron . . . and rough pull usage.

In introducing its post-war steam iron the SALTER COMPANY wanted an improved bushing to meet these requirements. Their engineers worked with the research development men of the ACHIMONT PROCESS COMPANY and, after careful testing, a Perbunan cord bushing was selected.

HERE'S WHY: Perbunan nitrite rubber more than meets the rigid tests of the Underwriters' Laboratories . . . and provides exceptional resistance to deterioration from heat, moisture, aging, flexing and rough handling.

Perbunan also has a new color stabilizer that keeps even the most delicate shades constant . . . with no discoloration of the fluids or materials it contacts.

Whatever rubber problem you may have, our experts will gladly help you solve it. Please write to our office nearest you.



OLD 1947 Station Wagon Station has been revised stabilizer and an adjustable rudder trim. The search bar might be used on extreme for landing and maneuvering. No stage changes are in sight.



NEW 1948 Station Flying Station Wagon, showing larger tail section, with adjustable rudder trim. New type Vise struts extend from tail to wing tips. New seats have also been designed.

Stinson Refines Voyager for 1948

While no radical changes are made, new model has slightly greater speed and load, with larger tail giving smoother ride.

Stinson, independent leader in sales of four place aircraft, announces for 1948 models of the Voyager and Flying Station Wagon. Features of the 1948 models are the largest overall load and the lowest list price of any comparable plane now on the American market.

Priced for the 1948 Voyager and Flying Station Wagon are \$6,459 and \$5,839 D.L. or without tax of \$5,389 and \$4,711 respectively (about \$400 more than last year's price). A newcomer to the field, the Luscombe Silhouette (not yet licensed), is expected next year and will probably sell for about \$6,300.

Comparisons of the 1946, '47, and '48 models indicate that Stinson evidently has no intention of making any radical changes in the Voyager. Modifications are limited to minor refinements, but the basic design remains practically unchanged.

Performance Gains—Improvements in performance apparent this year are in increased range and load capacity. Modest features have resulted in an improvement of the cruising range resulting to about 75 percent with the cruising speed increased from 125 to 130 mph.

Takeoff distances, depending upon gross weight vary from 285 ft. to 525 ft. using the standard propeller. Useful load capacity for 1948 is 1,106 lb., an increase of 160 lb. over previous models. Limitations of larger engine and increased fuel, and use of rubber tires on wheels in smoother riding qualities and easier handling for the pilot.

Stress Redesigns

To meet new requirements

Comparative Specifications Stinson Voyager 1947-48	
Span	34 ft. 6 in.
Length	24 ft. 6 in.
Height	8 ft. 11 in.
Empty Weight	2,220 lb.
Gross Weight	3,294 lb.
Useful Load	1,006 lb.
Cruising Speed	150 mph
Cruising Range	355 miles
Takeoff Distance	625 ft.
Max. Climbs	600 fpm
Range (Miles)	300 min.
Fuel Capacity	40 gal.
Fuselage not verifiable	

When passenger comfort Stinson engineers have designed new seats. Foot rests are adjustable and seat backs fold flat permitting easy access to the rear part of the cabin; the two rear seats trade three inches wider with lower backrests. Seats are upholstered in headrests, and form fitting side type armchairs. Rear baggage space has been added in the cabin so that load is more evenly distributed. Heat flow is regulated from a push-pull control on the instrument panel. Additional fresh air vents have been installed so that each passenger may regulate the amount of fresh air he desires. These vents are a standard pull down type which may be rotated to direct flow of air.

Reduced Oscillation—Sound level in the cabin is greatly reduced by soundproofing with Fiberglas material installed throughout. Engine exhaust system mufflers further reduce the noise level to such an extent that an enclosed loudspeaker may be used with the radio, permitting all passengers to enjoy radio reception during flight.

The rear cabin window has been enlarged to provide better visibility so that

air and water training.

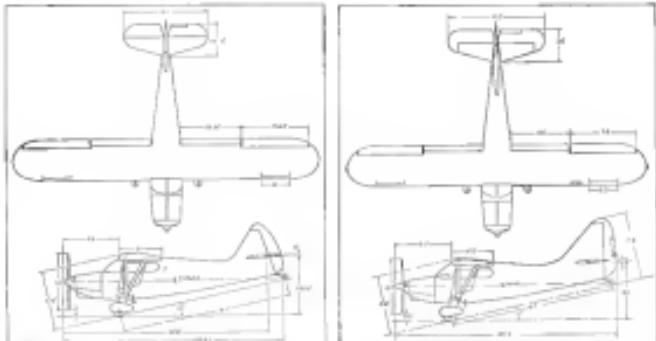
Provisions have been made for the installation of VHF, a carrier beacon receiver, and a controllable loop antenna in case owners wish to have such equipment mounted.

Panel Arrangements—Three instrument panel arrangements are available,

the standard eight panel includes an altimeter, airspeed indicator and a compass, the base band flight panel includes a bank and turn indicator, vertical speed indicator, and a clock, for full instrument flight, in addition to the base band flight instruments, an attitude gyro, a directional gyro, and a de-

signation indicator are added. Various fuel gauges are obtained from two venturi tubes.

Other optional equipment items include provisions for water landing, and skis for snow use and provides triple safety and rear road availability for the operator.



OLD: Showing dimensions of earlier (1947) model, note that both models have similar wing sections and wheel track, but this model has lower and smaller tail surfaces.

NEW: 1948 Model shows little change in ground outline except for unusually large tail surfaces. Rudder tail fin is clearly indicated. Horizontal stabilizer size also increased.

NEW AIRCRAFT



Extreme fuselage length of the Boeing 747 shows outside how easily they prove to installation of main wing panels and nacelles.



Close-up of the stacked engine nacelles. Each engine of passaged in wing, will drive a component of common propeller shaft which will project through hub between nacelles.



Front view of the tall nacelle gives an idea of the size of the completed structure. Lengthwise distance will be 127 ft 9 in. (148 photo, McGraw-Hill World News)



Front view clearly shows nacelle arrangement of engine nacelles. Each pair of engines will drive one common propeller shaft.

Assembling a Behemoth

Boeing's largest aircraft, the Boeing 747, rapidly outgrows her original quarters at the Boeing Aerodrome and has had to be moved to specially built assembly shops.

This first plane, with a wing span of 214 ft. (nearly as that of the Consolidated Vultee B-36) and a length of 177 ft., will be powered by eight Bristol Centaurus 16 cylinder sleeve-valve radial engines giving a total takeoff power of more than 20,000 BHP. It will be the only one of its type fitted with nonswiveling canopies; all production models will either Bristol Proteus turbines or considerably higher power output, giving the plane correspondingly increased performance.

The Boeing is a high altitude, long range, low wing aircraft with a wing divided into three sections consisting of center section and inner and outer panels. Maximum climb of 600 ft./min. Ceiling is 45,000 ft. Fuselage has a maximum diameter of 16 ft. 8 in. The span of the tail is 73 ft. and the height of the rudder is over 30 ft.

►**Great Weight.** At design gross weight of 225,000 lb. the prototype will have an initial ceiling of 25,000 ft. which will increase as fuel is consumed. Maximum high speed is 610 mph at 35,000 ft. and an economical cruising speed of 250 mph at 25,000 ft. is expected. Range is good at 5,000 miles.

Cabin will be pressurized, heated and air conditioned to accommodate passengers comfort at all altitudes. Passenger capacity will be 360 sleeping passengers by night and 200 seated passengers on daylight flights, plus a crew of 12, including 5 mechanics.

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The sharp nose and enclosed cowl shape of the XF-12 fulfills a designer's desire of an "aeroplane with aerodynamic considerations."

Design Analysis

F-12 Based on Fighter Experience

Republic's photo plane, outgrowth of same competition that bore XF-11, has exceptional high speed and long range characteristics.

By ROBERT McLAUGHLIN

Arrival of a contract in the U.S. Air Force for 20 Republic F-12 long range photo-reconnaissance aircraft, a saddlesocket of the plane in the dark folds of secrecy, and the description as a "secret weapon" type have brought this radical plane into sharp focus.

Capable of operating at 45,000 ft at a speed of 470 mph over a range of 4,500 miles, made possible by a crew of six, all weather equipment and fitted with a new power plant developing more power than both of existing power, the F-12 has suddenly assumed importance in the eyes of both the United States Air Force and the State Department.

► **Intelligence Weapons.**—The ability of the F-12 to obtain photographs, both in daylight and under conditions of limited visibility, at high altitudes over long ranges, with great speed makes it a potent intelligence weapon. Operating from certain bases (Alaska, Canada, etc.) the "true photo laboratory" is

capable of mapping broad stretches of territory in the Arctic regions and preparing air-sea construction and maintenance of routes and equipment with minimum vulnerability.

The subject, "Bomber," on its actual contract anomaly allows the strategic potentialities of the Republic

XF-12. It was born at the same time and in the same winter as the Hughes XP-11 (Aviation Week Oct. 11), as response to a previous bid for speed over distance and low cost, and was designed specifically for the purpose. Col. Elbert Russell's recommendations in August, 1943, were integrated into a long range specification proposed by the Photographic Section of the Air Technical Service Command at Wright Field.

Alexander Kartveli, Republic Aviation Corp.'s vice president and chief engineer, studied the requirements extensively and concluded that the required performance could only be achieved by a four-engine design using the new Pratt & Whitney Wasp Major

engines supercharged to provide full military power at 40,000 ft. After other considerations, design studies showed, failed either in speed, range, rate of climb or cost.

First Contract.—Kartveli's design staff prepared a proposal and on January 29, 1944, Republic received a go-ahead¹ from Wright Field. In March, 1944, contract W 17088 AC 2115 was awarded calling for the delivery of two XF-12 aircraft at a cost, including spare, amounting to \$250,000 and a fixed

By June, 1944, the completed mock-up had been inspected and approved by the AFM's² Board and the prototype was completed on December, 1945. First flight tests the second phase will be declared at Wright Field for issue Air Force acceptance tests.

► **Fighter Design.**—Throughout the design of the XF-12, low-drag was a primary consideration and many of its features were taken directly from Baubel's considerable experience with fighter plane design. The maximum wing thickness was determined by the main wheel fairing in the retracted position and this required a section 17% thick at the root which was tapered to a 12% section at the tip.

The trailing edge fairing plus a high wing loading (6.2 lbs per sq ft) is designed with a critical Mach number of not less than 0.70 (corresponding to 512 mph under standard conditions) at a lift coefficient of 0.3.

Since laminar flow sections then available could not meet the required needs, Kartveli and his staff developed a special arctic with an elliptical leading edge a maximum thickness location of 40% at the root and 45% at the tip and a straight trailing edge. The wing is twisted 4% laterally to provide prior starting of the internal motor.

► **Stresses.**—The most striking feature of the XF-12 is the engine nacelle installation, situated on the base of fighter de-



The XF-12's nacelle is one of the striking features of the plane. There were the result of light design, and their extreme length helps to reduce drag.

Folded Wing Planform

After only a few hours of flight tests, on July 10 the heavy craft was brought into a landing that severed the right main gear. A landing was subsequently made on left main gear and nose wheel which severely damaged the surface but it was later declared repairable.

The second 20-42 made its first test flight at Farmingdale, Long Island, on August 19 with Gene Hall, L. R. "Pete" Coffey and James Conner aboard. Following completion of company flight tests the second phase will be declared at Wright Field for issue Air Force acceptance tests.

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signs the design of these sections of external separation. All of the area between the nacelles, comprising about 25% of the total span, is fitted with panels.

To determine the correct lip shape a special wind tunnel model was built on which extensive tests of various configurations were conducted, the resulting design providing the wing to mesh with internal dimensions. We coefficient and to recover about 90% of total ram pressure, a remarkable accomplishment.

► **Design.**—An extremely rare case of design decisions, absolute no compromise with aerodynamic considerations can make in the shape of the XF-12 fuselage. The long pointed nose of the design virtually prohibits free separation. The resulting problem with a projected 100 ft wingspan and a maximum speed of 470 mph, was solved by the use of a double airfoil—the central halve of the fuselage sliding down into the fuselage to avoid a conventional "shock break" windbreak for use in bad weather. In normal flight, vision forward is directly through both windshields.

► **Drag.**—Both vertical and horizontal surfaces have a high aspect ratio to obtain maximum efficiency. The horizontal stabilizer has a dihedral angle of 6° to 6° to 6° above the trailing wing edge and prevent buffeting. On the basis of aerodynamic experience during the war with fabric covered control surfaces, the XF-12 features all metal control and features a solid type hydraulic system which eliminates the chance of air entering the gap between the control and the surface to which it is attached.

All controls of the XF-12 are sprung operated, being used in preference to hydraulic boost system with their design is the event of hydraulic system failure. The sprung system, with pilot effort just barely over an arm to which a spring and a control bar are attached, the spring absorbing the surface drag moment.

► **Power Plant.**—To provide the supercharging required for full military power at 40,000 ft., two exhaust-driven superchargers are used, each driving one engine nacelle with their own horizontal air intake units with gate valve directly to the rear through jet nozzles up to 10% of the engine power of the engine at 40,000 ft. as recovered in useful thrust energy. A further utilization of this exhaust gas may be gained by an afterburning system in which fuel is injected directly onto the tailpipe. This system affords up to 10% increase in thrust for short bursts of power.

To minimize the engine nacelle noise as much as possible, single driven cooling fans are mounted in the nacelle intake to provide adequate engine cooling



The air intakes in the leading edge of the wing created problems that were solved in a specially-constructed wind tunnel.

during climb and at high altitude. In maximum coil and air flow the turbo supercharger below it is directed into the ramjet. All exit cone flaps, which are of the sliding type, are automatically controlled by the servoset and require no attention from the pilot.

All fuel is carried within the wing between the main spars. Normal capacity is 4,150 gal and a maximum of 5,570 gal may be carried, whence for a range of 4,700 miles.

► Design Controls—The XF-12 was designed for a flying speed of Mach .850, but 0.8 (about 410 mph) standard configuration is planned. Maximum flying speed is to be attained during the slow flight at 7° angle located along the wing under surface near the leading edge, is installed.

The high performance of the design made it impossible to use standard load factor definitions. For example, present requirements specify a maximum dive speed of 1.27 times the design flying speed. While this factor is adequate for airplanes in the 100 mph class, the maximum diving speed of the XF-12 is 490 mph multiplied by this 1.27 factor gives 612 mph, which at 39,400 ft., corresponds to a Mach number of 0.97, considerably above the 0.8 of the XF-12. Therefore new aerobatic methods were developed for the XF-12 based on "time to reach diving speed from open."

► Contractors—Because the wing design required constant stress factors were established at the XP-12 consist of two heavy main struts to which the spar was attached. Each strut is a double built-up with the spar surrounded in between, the lower carrying the spar bending and shear stresses around large decreases.

Material used throughout the XF-12 structure is T-57 steel data. The fuselage is completely pressurized to a differential of 14.7 lb per sq in and it can take an over pressure throughout. The performed compartment outside from the windshield to the rear of the cabin and in the cockpit are completely sealed off from the floor.

► Equipment—The XF-12 carries a large number of photographic equipment, including complete dark room facilities to permit the development and printing of film in flight. These include all graphic equipment are included. A large hold in the belly accommodates 10 high intensity photo flash bulbs to permit night photography.

Carried equipment provisions include virtually any combination of Air Force types presently available of solid vertical, binocular, vertical view and night equipment, etc. Complete radio navigational equipment is carried in sliding equipment to permit night photography of radar undeterred, topographic and details.

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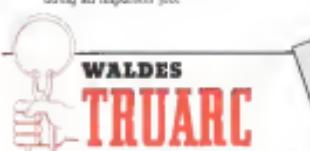
Courtesy N. & E. Mfg. Co.

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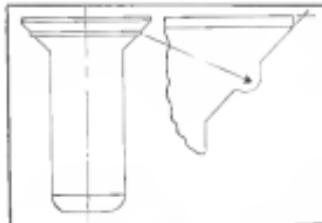


Fig. 1. Boeing Bell Ring Rivets-in hollowed-in head which is fastened into outer webs of counterflank hole.

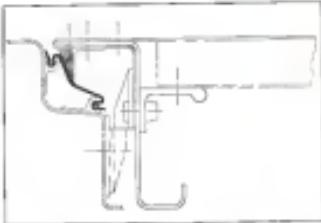


Fig. 2. Door and hatch self-sealing neoprene sheet is strip material held against locating blocks and inflated by cabin pressure.

Fine Points of Sealing Pressurized Plane

Potential leak sources identified . . . Role of rivets evaluated . . . Sealant materials analyzed.

Transition from low to high altitude aircraft, with attendant requirements for pressurization, has caused engineers to consider basic changes in design. Many of these are concerned with the overall configuration of the fuselage, often requiring significant but not always apparent—indeed, in detail—changes.

As disclosed by Boeing Staff Engineers A. S. Sodmergat at the company's recent symposium on high altitude flying, the basic configuration of the fuselage must be such that pressurization does not result in sealing loads which tend to change in shape and reduce leak deflections causing leakage or damage to sealing materials.

Basically, the fuselage should be a surface of revolution around the straight axis, as is constituted of aircraft which are in themselves surfaces of revolution. Any local deviations from a surface of revolution can easily be forced to every surface bearing loads without deflection. This design factor is analogous to the difference between the design of an aeronautical loadframe and a living boat bottom or integral hull tank in that for the two latter installations, engineers must be constantly alert to conditions which permit leakage. The pressurized body presents a more aggravating problem because the entire structure is involved.

Detail design to prevent leakage is complicated by the large number of parts which must be coordinated so that the different designers so that leakage conditions do not arise. Designed-in loads are structures very difficult to locate and the sealing detail

may be several feet long, with corrections being obscure.

Simplicity, rigidity, and accessibility are the main requirements for effective sealing. Within these limits, any structure which is capable of carrying the pressurized loads can be sealed, but the cost in money and weight to accomplish this will vary considerably with the degree of design care.

Source of Leaks—Leakage is potentially possible in every rivet hole, skin seam, pressure bulkhead-to-skin gasket, or every passage of stringers through pressure bulkheads, door, and

control cable opening. Installation design must be accomplished in these areas so that sealing is effectively possible for the structure to act as a pressure vessel, yield ahead of leakage.

It was once considered necessary that all areas contain sealing tape, that large amounts of putty be used; and that seal flange strips, multiplying of lines of rivets, and close spacing of rivets were required. All of these items added to the cost and weight of the craft, and it is easy to obtain maximum cost of manufacture. Testing, development, and implementation reduced these requirements.

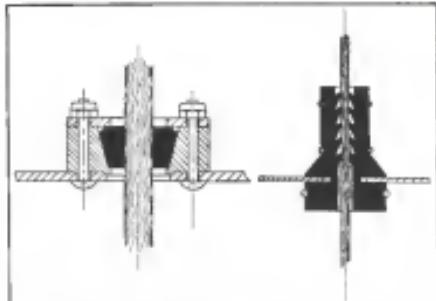


Fig. 3. Cable seal gaskets. Fine development is seen at left. Newer and (right) methods is simpler to install, and has lower cable friction.



Here is the clear, unprinted sky blown by gentle winds...

Here no shade of straw, no marble arch
no Gettysburg... no Flanders Field.

Yet here was a great field of battle... where gallant ones flew and fought, during death, suffering death... marching over death.
Their victories have made secure this sky—sacred altar of man's hope, symbol of his freedom, emblem of his future progress.
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and remember with simple thankfulness the courage and sacrifices of the heroes who have made it free.

DOWN TO EARTH FACTS

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TAFT-HARTLEY ACT

Frees "Slave" Labor

THE TAFT-HARTLEY ACT is two months old. Its full meaning is yet to be determined by decisions of the National Labor Relations Board and the courts. However, on its face, the Act refutes the attacks made upon it by union leaders as hysterical and fanciful.

Management has had every provocation to reply to these attacks in kind. To the credit of the compilers of this country, they have not surrendered to that temptation. They have maintained a temperate attitude toward the new law and the problems it is designed to correct. This approach is right. But it is only an approach.

Union leaders will want to settle for nothing short of repeal. Their attack on the Act has made some headway. It may be more effective as time goes on. Certainly the Taft-Hartley line will be repeated if management just sits tight and lets union leaders continue to confuse their followers.

Management, therefore, must implement its present temperate attitude with a program of positive action. The Taft-Hartley Act must be made to work not because management wants it, but because it is fair to labor—and management can do things right now to see that the Act works. Management can:

- I. Utilize every means at its disposal to acquaint the rank and file of union workers with the truth about the Taft-Hartley Act.
- II. Suggest amendments to the Act if experience indicates that amendments are necessary.
- III. Use the law as little as possible in settling labor disputes.
- IV. Stand firm in its refusal to bargain away the rights accorded by the Act to workers, management, and the public.

An examination of these four steps will show why they provide management with its best program of action.

L

Union members do not know what the Taft-Hartley Act provides.

There is abundant proof of that statement.

While Congress was still trying to write a law that the President would not veto, FACTORY magazine

asked workers how they felt about major proposals in the pending House and Senate bills. Overwhelmingly they felt good. They were in favor of almost every individual provision that was finally incorporated into the bill and passed over the President's veto.

The same story emerged from the national opinion poll made by the Opinion Research Corporation of Princeton, N. J., and published by Look magazine after the law was enacted. It showed that union members uniformly favored major provisions of the Act, but were strongly opposed to the Act itself.

This inconsistency is easily explained. Instead of telling them exactly what the Act does for them, most union leaders have been condemning it as "a slave labor law" because it curtails the leaders' power and recognises the rights of the union member and the public.

It is not a slave labor law. All of the basic rights accorded to labor by the Wagner Act of 1935 are preserved by the Taft-Hartley law. All of the unfair labor practices that were forbidden by the Wagner Act are still forbidden by the Taft-Hartley Act.

Nothing in the law deprives labor's right to bargain through representatives of its own choosing.

The Wagner Act considered as an unfair labor practice may effort by employers to coerce employees in the selection of their bargaining representatives. So does the new law.

The Taft-Hartley Act merely recognises rights of individual employees, of management, and of the public that were ignored by the Wagner Act.

For example, while the Taft-Hartley Act continues the workers' protection from coercion by employer, it also gives them new protection against coercion by unions. The individual worker is freed from the necessity of joining a union to get a job. He may still be required to join a union to keep his job, but not unless a majority of the workers vote for such a requirement in a government-supervised election.

Some people think the Taft-Hartley Act is weak in protecting the rights of the individual workers. They think that membership in a union should never be made a condition for holding a job. This is true. However, the Act does require to the individual worker some rights which were blotted out under the Wagner Act, just as it does to management and the public.

A fair examination of the new law's provisions will show that they spring from one dominating principle, i.e., to re-establish equality before the law.

For example, under the Wagner Act union leaders were free to say whatever they pleased about the employer to his employees. The employer, on the other hand, was denied freedom of speech as talking to his own employees. Now freedom of speech is largely restored.

Under the Wagner Act the employer was compelled to bargain with a certified union. Now the union need bargain, too.

Under the Wagner Act, unions alone had the right to petition for an election to determine whether the petitioning union represented a majority of the workers. Now the employer who has the right to serve on an election.

These are features of the new Labor law that management must help workers understand. They must understand why the Act is not the "Slaholic Statuary" Philip Murray tells them it is.

Some companies have already started to explain these things to their workers. Techniques are well established, and they are techniques that any company can use. They include labor law digests in language workers can understand, supervisory conferences to cover points in the Act that affect the supervisor's handling of his job, distribution of reprinted articles that point out how employees benefit from the new law, editorials in plant newspapers and magazines, and advertisements in local newspapers.

IL

Management should take the lead whenever attempts to the Taft-Hartley law become necessary.

For twelve years labor leaders wilfully opposed every attempt to correct obvious abuses in the Wagner Act. We have now proved that a labor law can be amended. Let us be sure that management does not resort to the same obstructionist tactics labor has always used.

In carrying out its basic purpose to re-establish equality before the law, the Taft-Hartley Act makes it "unlawful . . . for any corporation whatever or any labor organization to make a contribution or expenditure in connection with" refereed elections. Corporations have long been so restrained. The novelty is in the balancing restraint upon unions, which now have huge financial resources amounting to very many millions of dollars. However, the language of the Act may restrain the labor press from saying what it thinks about candidates, thus infringing upon the freedom of the press. Senator Taft has recognized this possibility.

It should develop that the Act inadvertently shrinks freedom of the press—or must otherwise—management should take the lead in securing sensible amendments to the Act. By assuming a completely still-minded attitude toward any and all

changes in the Wagner Act, no matter how badly needed, the dominant labor leaders and their political controllers finally brought on the sweeping revisions provided by the Taft-Hartley Act. Management must not follow that example of stupid leadership.

III.

Management will be wise if it uses the new law gently in settling labor disputes.

So far employers show no disposition to use the law excessively. That is good. An analysis of the NLRB's docket from August 25 to September 30 shows that approximately 90 percent of the cases now before the Board were filed by unions and employees—not by employers.

We have been surveying employers, asking if they will have occasion to use their right to sue their unions. The answer so far is consistently, "no." That answer frequently is accompanied by the remark, "We certainly hope not. We have no desire to conduct our labor relations in the courtroom."

The desired result should be for the Act to produce only those law suits that are matters of vital principle. As many employers have remarked, the courtroom remains the worst possible place to conduct labor relations. The best place is at the plant—by free collective bargaining between parties enjoying an equality before the law. The Taft-Hartley law will serve its most constructive role if it encourages this kind of collective bargaining.

IV.

Employers should not bargain away legal rights accorded to them by the Taft-Hartley Act.

By bargaining away rights given them in that Act, employers serve only to upset a carefully created balance of equality before the law which is an essential element of fair collective bargaining.

Also, by bargaining away rights properly accorded to them, they let down these members of Congress who, in voting for the Act, bawled outstrenuous threats of political assassination by powerful union leaders. For their statesmanship is the complicated field covered by the Taft-Hartley Act since Congressmen deserve the support and gratitude of the whole nation—of management, of labor, and of the public alike.

Fairly handled on all sides, the corrective force of the Act can be made a major hallmark of industrial freedom.



President, McGraw-Hill Publishing Company, Inc.

THIS IS THE 400 OF A SERIES

AVIATION SALES & SERVICE

CAA Airport Red Tape Scored At NASAO Convention

Veterans Administration discrimination against college flight courses protested at lively state aviation sessions.

By ALEXANDER MUSKELY

Indict that for of the federal airport and garage to meet needs of the small community which makes a small class I airport can hardly emphasize but would in a whole state membership of airports as new airport construction at the annual convention of the National Association of State Aviation Officials, it's "Worth It."

For simplification of handling CAA legal and engineering red tape for small low-cost airport and parks was held out by Administrator T. P. Wright, but subordinate airport engineers and legal administrators seemed a belligerent attitude in a session following the Administrator's talk offering no major concessions in repeated requests for cancellation of "paper work."

► Small Communities—Engines Frishoff, Mission, Floyd Evans, Mahaga, Avia Resources Alabama and A. W. Mendonsa Texas were among associated districts who reported that their small communities were unable to cope with CAA's complicated requirements, which were described as running up costs on the small projects.

"More than ever are we running out thinking to the only states and local funds an any small airports, because the Federal Airport Act requirements run up the cost," Frishoff reported. "23,000 is the starting line. An project order that is long way by dropping fuel and oil. Yet the intent of Congress is to make money available for small airports to promote aviation. It should be done."

Evans informed the convention that Mahaga could build 10 additional small airports if the requirements could be simplified to a one page specification and sketch plan for class I fields.

Administrator Wright indicated that he expected the administration to take place through administrative relaxation of requirements which experience would indicate.

An NASAO representative is anticipated to meet further with CAA airport engi-

neers' establishment, if he elected to take a flight course, but that if he chose any other course offered by the college or university, he was not affected.

Vets Wiley, Montana accountants director, Brown, and Frishoff, all contend while flight operation in these states had been "permitted" to change their courses or legs after their passengers had been held up and aircraft materials had been delivered until the operators agreed to the changes. One case was reported of an operator who changed his course from Ellington, Texas to a course using concentrated three-control training at the insistence of the V.A. representative who said delayed passengers to suffice, the change.

Brown declared that V.A. had so lagged on the rights of colleges and universities to provide their own distinctive courses to qualify as to impose an accelerated charge against the GI student's entitlement if he elected another training.

► Vets Denied—A resolution adopted at the convention, declared that the V.A. ruling of Sept. 10, affecting submarine

sailing and legal officials as an effort to agree on more simplified small airport requirements possibly totaling profits up to \$70,000.

Enforcement of the Veterans' Administration as state administrative agencies for the GI flight training program, and a reported policy of discrimination against college and amateur flight courses by veterans came in repeated requests for cancellation.

► Expansion Speeded—C. Brown, Ohio armaments director reported that VA's ruling on elective flight courses at colleges and universities in effect was a "speedup" of the expenditure of a



BELLANCA AT YOUNGSTOWN

The lot of Bellanca Cruisers at Youngstown Municipal Airport contains seven of them, the largest single type plane used by Youngstown carriers. Among the owners: Tompkins Aviation, Inc., Louis Troppa, head of Nita Motor & Welding Co.; Perfect Electric Division of General Motors, James S. Ferry of Central America Transportation Corp., and Ralph E. Mathews of Bremo, Pa.

When you're glad you have
a Snap-on



Snap-on Tools
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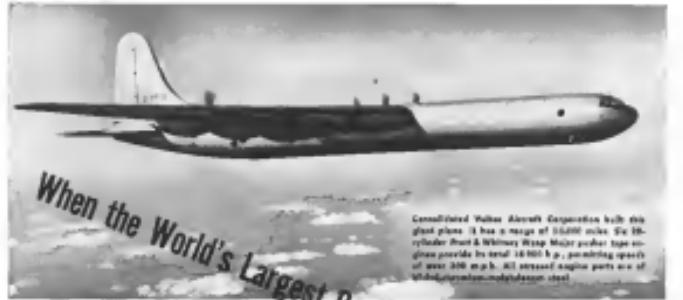


Here is an unusual, but mighty important use of a Snap-on Torqometer. Mounted on a special adapter, it measures the tension of the blade in the hub.

This is but one of many uses that has established the Snap-on Torqometer as a "must" in aviation maintenance and service. Veterans mechanics agree, that to avoid mechanical distortion resulting from "gasowalk" bolt tightening, you better use a Snap-on Torqometer because you can see the tension, accurately, right up front.

Snap-on Torqometers are available in 15 models . . . from 40 to 30 in. lbs., up to 3000 ft. lbs. Ask to see them when your Snap-on man calls or write for descriptive folder.

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NICKEL ALLOY STEEL LANDING GEAR PARTS RESIST IMPACTS THAT MAY REACH 1,000,000 FOOT POUNDS

The B-36 weighs 139 tons.

When landing, shock loads on parts that take the impact may soar to 1,000,000 foot pounds.

To meet these terrific stresses, main structural parts of landing gear units are made from Type 4340 Nickel-chromium-molybdenum steel.

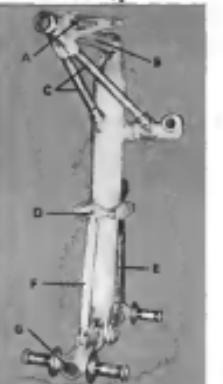
Heated treated to a tensile strength of 200,000 pounds per square inch, this Nickel alloyed steel provides remarkable toughness at this high strength level that results in an extra margin of dependability and resistance to occasional overstressing.

An alloy containing Nickel may be the answer to one of your problems. Send us details for our recommendations.



Over the years, International Nickel has accumulated a fund of useful information on the selection, fabrication, treatment and performance of engineering alloy steels, stainless steels, cast iron, copper base and other alloys containing Nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N.Y.



Consolidated Personnel Test Company produces air landing gear assemblies similar to the B-36 air Ta-110. Nickel alloyed molybdenum steel is the best material for landing gear parts. An ideal lever for aircraft landing gear is the "Dolby" lever shown here. It consists of a forged Link C-Aire strut.

to Sept. 1, "to effect damage the vehicles, the right to select routes, limiting on the time basis as others determine, and sets it aside as a separate course of study with auxiliary detail to the interests of the maximum use of his enforcement." The resolution, "expressly precluded" the rating, and added that it be rescinded.

► **Rampage Wears Out.** Robert Ranapared, executive vice president of Air Transport Association, warned against state legislation which would impose union dues, backrents and deplaning regulations on aviation, or would set up artificial barriers interfering with air carriers. He urged assistance to aviation as a tool to protect airports to itself, and urged opposition to recently proposed pilgrimage fees on fuel and oil imposed at airports, and against the intrusion of competition related to expensive fuel or oil contracts at airports.

Jonas Ledwith, aviation engineer engineer appointed to a review of flight schedules and related costs, said that he has no legislative restrictions, thermal cutting being among rates. He called for twice cross-country training as private pilot courses and use of "simple loops" instead of the scientific terminology of aviation.

Hugh Duthie, crash safety research specialist, appealed to the state officials for detailed reports on airplane accidents, to aid in continuing programs of study of avoidable injuries. He stated that a small plane can now be built which gives visual assurance of the occupant's safety in a crash at 40 to 50 miles an hour.

James Bischel, counsel for United Pilots & Mechanics Association, told the association that CAA flight training is "only a stepup." He urged the importance of insurance efforts to increase sales and non-CIA flight instruction of students. Bischel declared that the recent decision of CAA is attempting to obtain federal recognition on a pilot's license without national CAA spokesman have been discontinued. He criticized a legal CAA policy of "shortening" pilots with Federal Court tests and thereby steering them into military offices in compensation for alleged violations.

► **Aeronautical Programs.** Maurice Noss, CAA aeronautics chief, described programs of amending as the transcontinental T-1 Skyway No 2 for possible flights, and included a map showing cities, post roads, post roads, railway north and south along the east and west coasts and down the center of the U. S., and a northern transcontinental Skyway from Boston to Seattle, which are expected to be developed if local and state aid in securing along the routes is provided.

NASAO Officers

Clarence Cortese, aerospace director, Transoceanic, was elected president of the National Aviation Officers at Ft. Worth, succeeded Leslie Seaman, Minnesota Aerospace Director. Other officers and regional directors named are C. E. A. Brown, Ohio Aerospace Director, first vice president; Frank Wilby, Montana Aerospace Director, second vice president; William Larson, Florida Aerospace Director, third vice president; Edward Knapp, Vermont Aerospace Director, secretary treasurer; and Cochran Stew, Massachusetts; C. A. Moore, Mississippi; Robert Dewey, Illinois; Edna Street, Oklahoma; James D. Murray, Nebraska; Joseph J. Segers, Utah; and Charles Motter, Maine, regional director. Boston will be the site of next year's NASAO convention.

In other installations, the committee called for:

- Removal of limitations by states on helicopter operations, which restrict the helicopter beyond present east coast regulations.

- A national airline flight training program following the eventual discontinuation of the GL flight training.

- Reduction of supplier waste to the point where it will no longer be considered a necessity, through action of airplane manufacturers, on new airplanes.

- An Air Force lab with research and production programs to maintain the force's effectiveness.

- State Airport and by all states, to at least local spouses of seafarers.

- A conference with CAA and CAB leading toward an amendment to the Civil Aeronautics Act which will permit state courts and state aviation agencies to expand or revoke airmen's certificates with cause, after due process of law.

- Standardized rules, regulations and standards for aircraft aid.

O'Brien Appointed

Terence O'Brien of Elgin, Ill., has been appointed a director of the Kentucky Aerospace Commission. Mr. O'Brien is a former air force pilot and a test pilot during the war, has been serving since last July 1 as technical advisor and public relations officer for the Commission.

Small Load Service Flying Short Hauls

Cont'l Air Transport, Inc., Middlebury, Vt., has inaugurated a new and highly specialized short-haul load hauler service to supplement its already established air freight routes on the East Coast. Division to have service to areas within 600 miles of the eastern air band was made to permit better coverage and faster service.

Use of small planes with a high loading speed and refrigerated cargo compartments for dry-keeping perishables has proved that such operations decrease spending in transit and give such goods a longer shelf life after delivery, company officials say. Charges for this service are slightly higher than regular carrier fees but the difference, it is explained, is made up by added convenience and safety.

► **Occidental Slopelets.** Catering primarily to firms wishing to move small lots of goods to a metropolitan area for export shipment, or for transshipment to another location, the carrier, the new service offers aid to consumers who are occupied with one-time moves. It is planned to meet late or delayed demands when unpredictable customer good will be delivered at an emergency load, instant warehouse or inventory costs, avoid surface freight when air proven production time for air or last mile hours, and eliminate problems of shipments.

Items flown to date include women's apparel, fine jewelry, drugs and pharmaceuticals, men's apparel, machine parts, auto frames, tools, hardware, steel and lead pipe, charts, hardware, and electrical insulation.

► **Operations One Plane-Held.** By French D. Scott, former Navy pilot, the company at present is flying only one plane but expects to add others when volume of business warrants their purchase. Maintenance is handled by an on-call mechanic working on a preventive system developed by Mr. Scott, who reports that the plane has incurred costs for the work to about \$35 per month.

The plane now used is a twin engine Beechcraft equipped and learned for night and dead-stick. It is assisted with a single seat, which is installed in a light weight refrigerated unit which will lower the cabin temperature to about 30 deg. F. even though the outside temperatures exceed 35 deg. Days and windows are sealed to prevent heat in cargo compartments while plane is on the ground.

Last summer CAT flew 66,000 lbs of live lobsters from Maine to Atlantic City with a loss of less than 1 percent for the entire operation which was carried out during the hottest weather.

Big Used Engine Pool Claimed By LA Firm

Thousands of used aircraft engines have been sold by the world supply of used since 1950 Pratt & Whitney engines in demand at Los Angeles by Captain Aircraft Equipment Co., 1014 S. L. Angeles St., of that.

Until recently, after a buying campaign of several months, no used engine market had been created by a major supplier of surplus Pratt & Whitney aircraft engines, the company held 1,200 of the engines in stockroom at Los Angeles, Sacramento, and in Florida, Texas, and Oklahoma.

R. L. Rydell, corporate assistant to the president of North American Aviation, partner in the business with S. C. Rudolph, a Los Angeles liquidator, says following early results dramatically well to foreign buyers, that "Milestones" still remains approximately 2,000 1534, 93, 669, 1830, 80C, and 100 1530-65 engines in various condition.

Speculation as to the various might appear. Rydell believes the used engine market is far off for shortages that will bring on sales at prices ranging from \$300 to \$2,000 on the Pratt & Whitney 1530.

Student Restrictions Based By CAB

Liberation of student pilot ratings has been announced by the Civil Aviation Authority. As of Oct. 1, students under 18 years old, who have completed student pilots in a certificate flying school to operate an aircraft outside a local flying area designated by an instructor prior to having acquired 10 solo flight hours. Student pilots formerly were required to remain within a local flying area.

A further liberal interpretation of existing regulations has been made by T. P. Wright, Administrator of Civil Aerobatics with regard to the carrying of passengers in light aircraft. In a series of new definitions, Wright defined "commercial conditions" which a private pilot may run an air taxi as follows: (1) non-coupling trip carrying passengers who also could share the expense; (2) test-flying aircraft following repair and servicing checks from point to point; (3) as a traveling salesman the private pilot may use a vehicle for his personal transportation provided the aircraft is not used to deliver merchandise sold by salesman; and (4) a private pilot employed in a company for other than globetrotting of himself may carry passengers in other companies on business trips provided the pilot is free from personal transportation and other passenger are incidental to the trip.

A & E SCHOOLS—Mechanic schools certified by CAA graduated 3,113 students from Jan. 1 through June 30, and 16,666 students were in training as of June 30, CAA reports. As of Oct. 1, there were 87 certified schools, with the greatest number, 22, in Region I. More of the 87 schools, 45 in fact, give aircraft, engine, and combined courses. Twenty-one give the combined A & E course only.

AOPA'S AIRPORT RATING—Aircraft Owners & Pilots Association has completed its second annual check-up of airport conditions and reported that of 1,377 airports surveyed, 627 fields met the "adequate" or "conforming" standards of private flying. Although that is a modest improvement over the condition last year when but 495 airports and, above average, it is a good deal less than 50 percent of the fields visited and those fields continue to turn less than 50 percent of the airports permitting private flying. In addition to the 627 "above average" fields, 46 others qualified for the area. AOPA's head of operations, J. B. Morrison, general manager of AOPA, gives credit for the improvement to publicists in magazine and local press regarding the poor conditions.

BRIEFING FOR DEALERS AND DISTRIBUTORS

METROPOLITAN SALES OUTLOOK—Distributors in the New York, and one of the largest engine markets in the country, report a disconcerting picture among the sales trends. Flying equipment by one of the larger distributor of light aircraft said that the poor showing of sales could be traced directly to the state of production throughout the country, figuring that high price of accessories has damaged many would-be purchasers from instruments or what are believed to be losses. Another large dealer takes the stand that the sharp drop was due in part to the poor flying weather which has plagued the area over a portion of the season. His theory is that when poor flying weather prevails, the public goes less interest in aviation. Consensus is that business is so bad now that any change is bound to be an improvement.

GEMINI IN STORAGE—Many hundred units of the Miles Gemini, innovative personnel carrier and short range transport aircraft, which the Miles corporation was suddenly called back to Pacifica. The plane is at present in dead storage at the Canfield, N. J., airport. In the future, imports of Miles' planes will be handled by the firm of South Kingstown, New York. They plan no further use of the English version, stating that they prefer to wait until a plane equipped with Continental engines is available for demonstration to prospective buyers.

PLANE COMPETITION—With the recent demonstrations of the Lockheed Silver Star in New York and aviation publications on the Central 170 static display stage is the chance that these aircraft might become a major factor in the future sale of the longplane. Whether the aircraft will be able to compete in capacity and range with the general aviation sidekicks depends on many factors. It is understood that the aircraft destined to be overcome will be unable to demonstrate to meet attractive trade-in allowances, and the ability of sales staffs to overcome the sense of Stereotype leadership in that market. Selling price of the Lockheed and Convair have not been revealed but it is expected that these, too, will be in the \$6,000 price bracket.

COMPARISON ASKED—C. C. Moulton, president of Civil Aero Technical Institute, and General Contract Air Corp., Glendale, Calif., recently lectured the President of Civil Policy Committee to have a competent accounting of costs as means of cost for testing, evaluating, training, and maintenance of aircraft engines, propellers, and accessories. When the work done by the Air Force, and a cost analysis and analysis of costs at civilian schools and large civilian operations. Moulton argues that the Air Force should be a strong force and a manufacturer of specifications or standard form, and that the Air Force should support civilian aircraft companies, mechanic schools and flying schools by contracts, as they are supporting service forces. Air Force maintenance should be restricted to line service maintenance, as what the Air Force calls first echelon maintenance, Moulton believes. The result would not only be a healthy aircraft industry, but an important savings in cost, and efficiency, in the overall operation.

STATE SHIFT SOON—Negotiations for the sale by Republic Aviation Corp. of its Seafire unit will progress with an announcement expected shortly. While negotiations are open to prospective purchasers, there are grounds for belief that the production of the Seafire will remain in the East, although a midwest separation still is in the running. Republic has nearly closed out its backlog of some 90 completed planes, with a sizable portion going onto export. The Seafire testing continues in place in the Republic plant, but must be moved shortly to make way for midwest work. This leads increased anxiety to the question of disposal of the amphibians.

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Dependable **CHAMPION**

AMERICA'S FAVORITE SPARK PLUG



AMERICAN AIRLINES
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Amphibian Air Transport's Unusual Service to Catalina

An Unusual Test of Spark Plugs



Twelve round trips daily from Long Beach to Avalon, Catalina Island and vice round trips from Burbank to Avalon, with extra sections on Saturday and Monday, is the unusual equipment of Amphibian Air Transport Incorporated.

Here is a real test of spark plugs and one which Champion Currently Aircraft Spark Plugs meet with outstanding success. Mr. C. E. Mangens, Vice President, writes: "We have used Champion Spark Plugs exclusively since commencing our operation—over 200 Champion—the only plug that will stand the constant starting and stopping of engines, necessitated by our type of operation." Champion Spark Plug Company, Toledo, Ohio.

**DEMAND NEW DEPENDABLE CHAMPIONS
AND FLY WITH CONFIDENCE**

Call to CHAMPION 808, CAA, Mary Warner's first apartment away Friday night, near ABC refresh-



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THERE'S GOOD REASON why many of the country's builders of power aircraft—such as this brand-new five-mile-a-minute Martin 30-3—turn to Pittsburgh for finishes that are exceptionally durable and good looking. In an Aerohide Aviation Finishes, Pittsburgh offers a complete line of especially durable industrial paint systems. These coatings are the result of extensive research, leadership in patterning which derives from intensive research, wide experience and a sense of quality control unmatched in the industry.

Aerohide Finishes provide maximum protection against corrosion of metal parts, warping and weathering of wood and deterioration in loss of coat-

ing or fabric. They help to maintain structural stability.

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PITTSBURGH PLATE GLASS COMPANY, located at Three Decades, Pittsburgh, Pa., 15222; **International Paint Company**, 100 Madison Avenue, New York City 10016; **Painters Supply Company**, 100 Madison Avenue, New York City 10016; **The Pittsburgh Plate Glass Company**, Japan, 10000.



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1947 IATA Sessions Concluded in Brazil

RIO DE JANEIRO—The third annual general meeting of the International Air Transport Association has concluded at Quantalata after discussions of several issues of interest to world airfares.

Approved a budget of \$645,000 for 1948 slightly higher than 1947 in perspective for joint traffic studies and American liaison office for reduced rates, the congress voted a new method of assessment of IATA fares.

Revenue tax allowances performed in each member's international operations are the basis for the new formulas, which totals amounts to a \$2,500 maximum for associate members and \$18,500 maximum for active. Previous basis was the all-up weight of each flight in international operations.

Two new admissions to membership were approved: British Commonwealth Pacific Airlines, Central African Airways, Compagnie Belge de Transports Aériens, Czechoslovak Air Transport, Maltese members, and Lloyd Aeroflot, and one associate member, Taito. Total membership now is 63. The meeting voted a proposal to adopt shorter entries in a revised membership category, leaving IATA restricted to scheduled airlines.

In addition the general meeting set up arbitration procedures for settling disputes without recourse to law, through three-member panels of which a majority decision is binding on both parties to individual disputes.

• Voted revisions in revised decisions of commission looking into alleged abuses of IATA traffic conference obligations.

• Urged that governments ratify a new international convention to define ownership rights in aircraft used internationally.

• Established procedure of the traffic conference over compensation for travel agents, and

• Abolished a \$100 fee for members to encourage smaller airlines to join sessions of the IATA clearing house.

Brazil was selected as site of the 1948 meeting for next session.

The general assembly followed joint sessions of the Association's three traffic conferences at which it reported "an unprecedented agreement on worldwide uniformity of traffic and passenger handling procedures" were reached.

Tokyo Letter

Air Travel Booming in Pacific

TOKYO—From Pacific air passenger business is really booming, judging from the results of Pan American, United Airlines and Northwest Airlines officials. Pan Am's Pacific division is said to be making money. In the first four months of the year, the airline had always been in a gross loss.

If the current price is maintained, Northwest expects to see its Northwest Passage route and Orient service paying in on the block load of the legacy by early '68. Recovery of Japan to generate foreign trade has provided a lot of intense passengers. Another factor helping load passenger lists has been the generally poor accommodations provided by virtually all air lines.

Establishment of an air mail agency and surface has received a lot of help behind the scenes recently in recent months. Right now every airline is trying to get into the air. The Far Eastern Commission is supposed to have put the lid down.

The point is that a Japanese civil airline could dominate the field. This would eliminate the services performed by U.S. Air Force units. Pan American and Northwest officials were called in to help with the argument.

Beyond agreeing that the time has past for military operations in Asia, Pan Am and Northwest are engaged in discreet discussions. Pan Am would like to take over the entire management of the operation since Northwest doesn't want to do the job single-handedly; it does want a larger in the pie.

With the lax on Japanese participation in aviation activities, a foreign airline in group of airlines would have to take on the job of setting up and operating the airline. One strong point which Northwest is boasting the down about is that it is still Asia base and located at Haneda Airport, Tokyo.

It also has a couple of pluses. DC-3s sitting on the airport there make the shuttle jobs to Seoul, Korea and take off and land short after flights arranged by acceptance personnel. This situation will make much face for Northwest around SCAP.

A. W. Jones

**Aero 45**

The Aero 45 is the first Czechoslovak all-metal aircraft manufactured by the Aviacon Walki, National Corporation under the title. Its basic plan is to use its freight transport or passenger aircraft in civil and military flights. When fitted with dual control it can be used as a training aircraft and when suitable equipped, can be used for practice in radio-telegraphy or aerial photography.

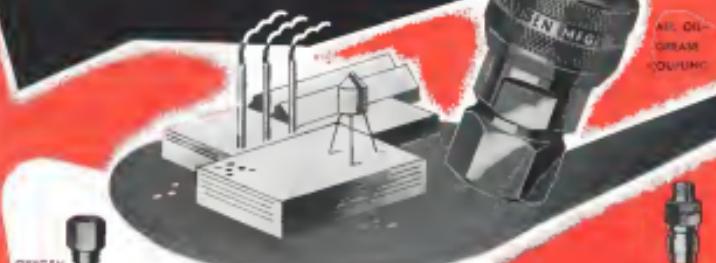
The spacious cabin of the craft is designed to offer the maximum of headroom and is fitted with seats for four or five passengers. Power is supplied by two inverted inline air-cooled five cylinder WALTER MINOR 4-II engines, each of 105 bhp.

Dimensions:	
Span	49' 35"
Length	24' 6"
Height	7' 34"
Weights:	
Empty	1,308 lb
Diesel load	1,101 lb
Gross weight	2,911 lb

Performance:	
Max speed/sea level	100 mph.
Cruising speed	155 mph
Landing speed	47 mph
Absolute ceiling	17,800 ft
Range cruising	395 miles

Flight trials have proved this high stability and maneuverability at any speed, even on only one engine.

WITH AN EYE ON PRODUCTION Costs
AND PRODUCTION Volume

OXYGEN
COUPLINGAIR/OIL
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HANSEN COUPLINGS SAVE TIME...CUT COSTS

It's the minutes saved on operations repeated many times daily that mount up to substantial savings in time...and money. With Hansen Couplings, connections and change-overs become a matter of seconds with no hold-up of costly operations.

To connect a Hansen coupling, you merely push plug into socket. To disconnect, slide sleeve back with thumb. In both cases, flow is immediately and automatically turned on or off...with no time wasted, no losses.

There is a specific Hansen coupling made for air, oil, grease, for oxygen, and for acetylene. Available in a wide range of standard sizes.

Write for catalog describing full line of Hansen couplings and fittings for industrial use.



Red plastic oxygen hose from manufacturer is used in valveless oxygen systems. It has a built-in valve which holds pressure when disconnected.



Red plastic oxygen hose from manufacturer is used in valveless oxygen systems. It has a built-in valve which holds pressure when disconnected.

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NOW—Bell Helicopters Battle Locust Hordes

Argentina's肆虐 locust plague with every weapon at its command. But each succeeding season has brought new weapons and variations recorded. As locusts have swarmed, locust hoppers of sharp metal blades started to lower to the ground and some infected more than 200,000,000 last year.

Today, new weapons are being used to battle the locust-damaged region—a task force of 10 Bell Helicopters armed with deadly insecticides. Twenty Bell Helicopters are now.

"Bell helicopters flying directly into locust swarms," said with 94% kill, "first time locusts effectively stopped in Argentina."

During one helicopter attack, operators reported that they had to make four separate passes in different directions with dead locusts unaccountable to continue. "Working in teams of two helicopters, each pair applies thirty-three pounds of anti-locust dust daily."

In other words, TAYH expects to benefit from the usefulness of The Modern

'Magic Carpet'. The Bell Helicopters will come often, locate areas, drop spray crops. For supervisory personnel, they'll monitor the Argentines' various

operations and release Bell Helicopters again. Once control is gained, the job is to all locate crops gathering eggs and pupae, exploring for all nesting prospecting and moving live. You name it, the Bell Helicopters does it. For Bell Days were Helicopter Division Bell Aircraft Corp., P. O. Box 1, Buffalo, N. Y.

BELL HELICOPTER

PRODUCT OF BELL Aircraft CORPORATION
PIONEERS IN JET PROPULSION, RADAR CONTROLLED FLIGHT AND AUTOMATIC ALARM FOR THE U. S. ARMY AND NAVY. DESIGNERS AND BUILDERS OF THE WORLD'S FIRST COMMERCIALLY LICENSED HELICOPTERS FOR LAND AND WATER

Three Czech Sportplanes

RODEK HK101: This two-seat monoplane has two place aircraft which adopts 30 ft for high sporting performance and variable for touring and transport. Span is 35.2 ft, length, 29.5 ft, height 6.5 ft. Empty weight is 1,402 lb. Useful load is 451 lb. Maximum speed at sea level is 219 mph. Cruising speed is 167.5 mph. Starting and landing speed with flaps is 50.7 mph.

FRAGA E211: Equipped with two power WALTER MINOR engines, this four-seater high-wing monoplane can be used for racing, touring, and aerial acrobatics, and is suitable for Aerobatic contests. Span is 35 ft, length, 27 ft, height 6 ft. Craft loads well. Flaps down at 30 mph, cruise at 177 mph. Service ceiling is 17,690 ft.

SOKOL M1C: A low-wing craft in monoplane with three seats in enclosed cabin, this craft is fitted with a WALTER MINOR engine of 185 bhp. Fuselage is of wooden frame covered with plywood. Tail unit is separated from engine by a fairing. Height: Span is 37.5 ft, length, 28.1 ft, height 6.4 ft. Gross weight is 1,747 lb. Cruising speed is 132 mph. Ceiling is 16,000 ft.



The Rodek HK101, a trim two place sportplane, is one of a series of new Czechoslovak aircraft.



Suitable as an aerobatic or for private pilot use the Fraga E211 is pictured at a Czechoslovak airfield.



The Sokol M1C in flight. All World News photos.



Praga Air Baby, powered by either PRAGA D-15 Msp or WALTER MIKRON 65 Msp, is shown in actual flight.

Praga Air Baby

Praga Air Baby boasts a low fuel consumption, simple construction. Wing is in single piece two spar. Fuselage and rudder units are made of wood with plywood covering. Elevators and a rudder of welded steel tubing covered with fabric.

Lubrication system will vary according to type of engine employed. The WALTER MIKRON engine is fitted with an oil tank with float bypass; the PRAGA D engine

Pilot/Passenger	MIKRON	PRAGA
Max speed	116 mph	116 mph
Cruising speed	102 mph	102 mph
Stalling	40.5 mph	40.5 mph
100' rate of climb	57.4 ft./sec.	59.6 ft./sec.
Ceiling	13,900 ft.	16,100 ft.
Range	425 mi.	590 mi.
has a broader trail without any external piping		
Dimension		
Length	Wheel track	6.25 ft.
With PRAGA D	Wing span	17.44 sq. ft.
With W MIKRON	Weight	
With PRAGA D	Engines	790 lb.
With W MIKRON	Tail	99 lb.
Height	Fly load	156 lb.
	Gross weight	1,612 lb.



Close-up view of tail landing assembly on the Praga Air Baby E144 light twin座er high wing sporting and initial training monoplane. Craft is equipped with towing gear for gliders.



Even seven through a folding boom boom and rudder with safety locks on the landing gear is provided on the Air Baby. Seat backs are removable; spacious legs provide accommodations for luggage.



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AVIATION WEEK, November 10, 1947

FINANCIAL

Results Vary for Plane Makers With Non-aviation Subsidiaries

Some manufacturers disposing of diversified enterprises in contrast to earlier trend; others just starting in outside fields.

Conflicting trends prevail among aircraft manufacturers who are divesting or have divested parts of their activities away from aviation per se. With the maturing of military sales over two years ago, many aircraft companies were faced with the problem of striking production techniques and the investment of considerable hard, balance.

In a paroxysm, there was a deluge using finding the purchase of industrial enterprises completely unrelated to aviation. For example, the boldest step was taken by Consolidated-Vultee which it acquired control of ACF Bell Metal Co. Further, the aircraft builder previously entered into an agreement with an parent, the Avco Corp., Avco Manufacturing Corp., to produce standard aluminum pools such as landing stores and bare implements.

As recently noted, Convair is in the process of diversifying and developing its new manufacturing activities. It has been possible to calculate the income of the programs previously followed by Convair. Ultimately, these diversification investments grew to more than \$29 million and left Convair's net total assets totaling more than \$81 million. That far, Convair has sustained a substantial loss on its investment in ACF Bell and its contract manufacturing activities in the non-durable goods industry.

On the other hand, Avco Manufacturing Corp., which was first to leave aviation activities, reported a net profit of \$462,184 for the same months ended Aug. 31, 1947. These earnings came largely from operations of its oak barrel division, Convair (Metals) Inc., New Mexico, Inc. (Dura insulation) and American Control (shutter and screen goals).

Curtiss-Wright Corp.—One of the aircraft manufacturing leaders has established the Curtiss-Wright Corp. The president of this company recently announced that it had \$93 million in excess working capital holding for market. The company's total net working capital balances aggregated \$70 million, but of this amount only \$50 million was required in the normal aircraft function. This integrated air craft builder probably has diversified in other fields with the actual amount of such investments not disclosed. Moreover, the progress of such controlled sub-

sidiaries is measured with considerable vagueness. For example, the 1946 annual report noted that the Marquette Metal Products Co., manufacturer of textile guides, air compressors, automotive and precision parts, has developed "a new diesel engine generator with apparent success." In the place of actual figures, is this comment: "The operation has proved well worth while to the stockholders of Curtiss-Wright Corp., as, regardless of condition, its earnings during the year have been substantial." Similarly, in describing the Victor Autograph Corp., another subsidiary, the consensus is advanced:

"It is considered a good investment basis for the present value of Curtiss-Wright stockholders." The firm is apparently expected to the LGS Spring Catch Corp., another division. Its products are mentioned as follows: "It is believed that the company, although small, has real possibilities."

Curtiss-Wright has long wanted efforts on the part of its stockholders to reduce its capitalization. However, this element of shrewdness is not very profitable. These are 12½% stock shares of \$100 a share which are entitled to \$40 per share upon liquidation. At this rate, the equity amounting to the \$12,000 shares would be reduced to a substantial degree.

Not Uncommon.—Not all aircraft companies, however, have diversified their manufacturing activities. Boeing, United Aircraft and Douglas are examples of the major builders which have shown no signs of moving from the aircraft field.

The action of capital by aircraft companies begins to need of excess working capital, has been pressed by stockholder groups. This was one of the major issues in the recent battle with the Bell Aircraft management over this issue. This investment, totaling \$5,000,000, has been returned a profit to Lockheed. While completely unrelated to aviation, this contribution is a very liquid asset and can easily be sold by Lockheed, presumably at a profit.

Gwynne Aircraft Engineering Corp.—about two years ago started the manufacture of a new type aluminum corrugated aircraft sheet metal.

Curtiss-Wright Corp.—One of the aircraft manufacturing leaders has established the Curtiss-Wright Corp. The president of this company recently announced that it had \$93 million in excess working capital holding for market. In fact on balance when over-stressed, heavy deficits have been incurred. In the final analysis our oil service believe that a stockholder in an aircraft company generally anticipates that management will focus in that activity and the quality of its direction will be responsible for its ultimate success.

Selig Atchard

AVIATION WEEK, November 10, 1947

FINANCIAL

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AIR TRANSPORT

Douglas Surveys Airline Traffic Trends Between 1947 and 1950

Plane builder forecasts moderate growth in domestic passenger mileage but impressive gains in cargo volume; recommends airfreight subsidy.

By CHARLES ADAMS

A modest growth in domestic passenger and mail traffic but a surging expansion in domestic cargo business and in all types of international air transportation is predicted for the next three years by plane builder Douglas W.

Passenger miles flown by the domestic airlines will increase from 6,710,000,000 in 1947 to 8,070,800,000 in 1950—a gain of about 15 percent, the Douglas Co. president told the House's Air Policy Committee recently. During the same period, he expects overseas and international passenger volume to expand from 1,660,000,000 to 3,115,000,000—a gain of nearly 90 percent.

Factors in Expansion—Continued expansion of domestic passenger travel is the chief in the next several years, based primarily on their factors in Douglas' opinion. They are technological developments promising greater flying safety and all-weather operations,

education of the general public in the advantages of air travel and elimination of the fear of flight, and maintenance or narrowing of the fact that 1 cent per mile differential between air and rail was last year.

Douglas' estimate of domestic passenger traffic gains is conservative in comparison with two other well published predictions made during the past year. December's *The Port of New York Authority* predicted domestic revenue passenger miles in 1950 would approximate 18 billion miles. Alvin P. Adams, transportation commissioner, in April of this year, forecast 11 billion revenue passenger miles in 1950.

Passenger Gains—According to Douglas' survey, 1947 domestic revenue passenger mileage of 6,710 billion will be about 15 percent better than 1946. In 1948, bearing a depression, the study says an 11 percent gain is 7,450 billion revenue passenger miles, and in 1949 and 1950 further 10 percent gains in

\$325 and \$4.87 billion revenue passenger miles, respectively.

Increases in domestic and mail traffic will be at a slightly slower rate than average passenger miles. Douglas believes, from 32,96 million ton miles in 1946 he forecasts a gain to 34 million ton miles in 1947, 37.80 million in 1948, 41.80 million in 1949 and 45.70 million in 1950.

Plane builder's forecast of cargo traffic growing will be in the cargo field, according to the Douglas study. From 18.6 million express and freight ton miles flown by the reinforced lines in 1946, a jump to 1947 aviation ton miles in 1947 is expected, followed by 205 million ton miles in 1948, 265 million in 1949 and 317 million in 1950. The figures for 1947-1950 include estimates of freight ton miles which the privately unchartered all-cargo carriers will have.

The aircraft carrying mail, the Air Mail Commission, the Post Office Board, investments in national defense of the nation and present might be substantiation of airtight operations. He said such a service would enable the carriers to drop tariffs to a level where cargo volume would be a certainty.

Productivity Improves—An operating subsidy—possibly on a plane scale basis—is more important than government contributions toward shifting the development costs of newer and more efficient cargo planes, Douglas said. He added that engineers are especially

DOUGLAS AIRCRAFT CO. SURVEY OF AIR TRANSPORTATION GROWTH

Year	Domestic Passengers-Miles and Ton-Miles			International and Transoceanic Passengers-Miles and Ton-Miles		
	Passenger Miles (Billions)	Express and Freight Ton-Miles (Billions)	Total Passenger Miles (Billions)	Passenger Miles (Billions)	Mail Ton-Miles (Billions)	Express and Freight Ton-Miles (Billions)
1946	5.92 25	1.36	6.74	6.42	0.10	6.51
1947	6.70 33	2.16	8.76	9.89	0.07	9.96
1948	6.15 40	2.17	8.32	8.78	0.06	8.84
1949	6.77 47	2.71	9.48	10.00	0.12	10.12
1950	7.40 54	2.94	10.34	11.77	0.16	11.93
1951	8.07 61	3.24	11.31	12.85	0.22	13.07
1952	8.76 68	3.54	12.30	13.50	0.31	13.81
1953	9.44 75	3.84	13.28	14.84	0.41	15.25
1954	10.12 82	4.14	14.22	16.12	0.51	16.63
1955	10.80 89	4.44	15.24	17.52	0.61	17.93
1956	11.48 96	4.74	16.20	18.94	0.71	19.65
1957	12.16 103	5.04	17.14	20.32	0.81	21.13
1958	12.84 110	5.34	18.18	21.70	0.91	22.59
1959	13.52 117	5.64	19.22	23.08	1.01	24.09
1960	14.20 124	5.94	20.26	24.46	1.11	25.57
1961	14.88 131	6.24	21.30	25.84	1.21	27.08
1962	15.56 138	6.54	22.34	27.22	1.31	28.59
1963	16.24 145	6.84	23.38	28.59	1.41	30.07
1964	16.92 152	7.14	24.42	30.00	1.51	31.48
1965	17.59 159	7.44	25.46	31.41	1.61	32.89
1966	18.27 166	7.74	26.50	32.79	1.71	34.27
1967	18.95 173	8.04	27.54	34.17	1.81	35.65
1968	19.63 180	8.34	28.58	35.55	1.91	37.03
1969	20.31 187	8.64	29.62	36.93	2.01	38.41
1970	21.00 194	8.94	30.66	38.31	2.11	39.79
1971	21.68 201	9.24	31.70	39.69	2.21	41.17
1972	22.36 208	9.54	32.74	41.07	2.31	42.55
1973	23.04 215	9.84	33.78	42.45	2.41	43.93
1974	23.72 222	10.14	34.82	43.83	2.51	45.31
1975	24.40 229	10.44	35.86	45.21	2.61	46.69
1976	25.08 236	10.74	36.90	46.59	2.71	48.07
1977	25.76 243	11.04	37.94	47.97	2.81	49.45
1978	26.44 250	11.34	38.98	49.35	2.91	50.83
1979	27.12 257	11.64	40.02	50.73	3.01	52.21
1980	27.80 264	11.94	41.06	52.11	3.11	53.59
1981	28.48 271	12.24	42.10	53.49	3.21	54.97
1982	29.16 278	12.54	43.14	54.87	3.31	56.35
1983	29.84 285	12.84	44.18	56.25	3.41	57.73
1984	30.52 292	13.14	45.22	57.63	3.51	59.11
1985	31.20 299	13.44	46.26	59.01	3.61	60.49
1986	31.88 306	13.74	47.30	60.39	3.71	61.87
1987	32.56 313	14.04	48.34	61.77	3.81	63.25
1988	33.24 320	14.34	49.38	63.15	3.91	64.63
1989	33.92 327	14.64	50.42	64.53	4.01	66.01
1990	34.59 334	14.94	51.46	65.91	4.11	67.39
1991	35.27 341	15.24	52.50	67.29	4.21	68.77
1992	35.95 348	15.54	53.54	68.67	4.31	70.15
1993	36.63 355	15.84	54.58	70.05	4.41	71.53
1994	37.31 362	16.14	55.62	71.43	4.51	72.91
1995	37.99 369	16.44	56.66	72.81	4.61	74.29
1996	38.67 376	16.74	57.70	74.19	4.71	75.67
1997	39.35 383	17.04	58.74	75.57	4.81	77.05
1998	40.03 390	17.34	59.78	76.95	4.91	78.43
1999	40.71 397	17.64	60.82	78.33	5.01	79.81
2000	41.39 404	17.94	61.86	79.71	5.11	81.19
2001	42.07 411	18.24	62.90	81.09	5.21	82.57
2002	42.75 418	18.54	63.94	82.47	5.31	83.95
2003	43.43 425	18.84	64.98	83.85	5.41	85.33
2004	44.11 432	19.14	66.02	85.23	5.51	86.71
2005	44.79 439	19.44	67.06	86.61	5.61	88.09
2006	45.47 446	19.74	68.10	87.99	5.71	89.47
2007	46.15 453	20.04	69.14	89.37	5.81	90.85
2008	46.83 460	20.34	70.18	90.75	5.91	92.23
2009	47.51 467	20.64	71.22	92.13	6.01	93.61
2010	48.19 474	20.94	72.26	93.51	6.11	94.99
2011	48.87 481	21.24	73.30	94.89	6.21	96.37
2012	49.55 488	21.54	74.34	96.27	6.31	97.75
2013	50.23 495	21.84	75.38	97.65	6.41	99.13
2014	50.91 502	22.14	76.42	99.03	6.51	100.51
2015	51.59 509	22.44	77.46	100.41	6.61	101.89
2016	52.27 516	22.74	78.50	101.79	6.71	103.27
2017	52.95 523	23.04	79.54	103.17	6.81	104.65
2018	53.63 530	23.34	80.58	104.55	6.91	106.03
2019	54.31 537	23.64	81.62	105.93	7.01	107.41
2020	54.99 544	23.94	82.66	107.31	7.11	108.79
2021	55.67 551	24.24	83.70	108.69	7.21	110.17
2022	56.35 558	24.54	84.74	110.07	7.31	111.55
2023	57.03 565	24.84	85.78	111.45	7.41	112.93
2024	57.71 572	25.14	86.82	112.83	7.51	114.31
2025	58.39 579	25.44	87.86	114.21	7.61	115.69
2026	59.07 586	25.74	88.90	115.59	7.71	117.07
2027	59.75 593	26.04	89.94	116.97	7.81	118.45
2028	60.43 600	26.34	90.98	118.35	7.91	119.83
2029	61.11 607	26.64	92.02	119.73	8.01	121.21
2030	61.79 614	26.94	93.06	121.11	8.11	122.59
2031	62.47 621	27.24	94.10	122.49	8.21	123.97
2032	63.15 628	27.54	95.14	123.87	8.31	125.35
2033	63.83 635	27.84	96.18	125.25	8.41	126.73
2034	64.51 642	28.14	97.22	126.63	8.51	128.11
2035	65.19 649	28.44	98.26	128.01	8.61	129.49
2036	65.87 656	28.74	99.30	129.39	8.71	130.87
2037	66.55 663	29.04	100.34	130.77	8.81	132.25
2038	67.23 670	29.34	101.38	132.15	8.91	133.63
2039	67.91 677	29.64	102.42	133.53	9.01	135.01
2040	68.59 684	29.94	103.46	134.91	9.11	136.39
2041	69.27 691	30.24	104.50	136.29	9.21	137.77
2042	69.95 698	30.54	105.54	137.67	9.31	139.15
2043	70.63 705	30.84	106.58	139.05	9.41	140.53
2044	71.31 712	31.14	107.62	140.43	9.51	141.91
2045	71.99 719	31.44	108.66	141.81	9.61	143.29
2046	72.67 726	31.74	109.70	143.19	9.71	144.67
2047	73.35 733	32.04	110.74	144.57	9.81	146.05
2048	74.03 740	32.34	111.78	145.95	9.91	147.43
2049	74.71 747	32.64	112.82	147.33	10.01	148.81
2050	75.39 754	32.94	113.86	148.71	10.11	150.19

Passenger miles are converted to ton-miles on basis of 200 pounds per passenger (including excess baggage).

adaptable to various military uses.

U.S. carriers engaged in overseas and international air transportation will increase their revenue passenger miles from 1.2 billion in 1946 to 1.6 billion in 1947, 2.1 billion in 1948, 2.6 billion in 1949, and over 2.2 billion in 1950, according to the Douglas study. Mail Volume—Growth and Intensity factors and ton miles will rise from 8.14 million in 1946 to 11.1 million in 1947, 13.67, 16.10 million in 1948, 19.58 million in 1949 and 23.20 million in 1950, the survey indicated. Factors and freight ton miles to and from foreign countries will continue to grow with its management and resources," the Association declared. "The air industry is more than 20 years old. It has witnessed the birth of a giant. Its days of being surprised and baffled should be terminated."

Total subsidies for the airlines were listed by the national group at follows and payments: \$10,693,000; imports, \$56,287,300; airports and aids to navigation, \$33,300,000; weather observing and forecasting, \$10,300,000; safety laboratories and practices, \$10,000,000; government air promotional activities (CAA and CAA-1), \$1,000,000; maintenance, \$4,024,000; technical research and development (CAA), \$1,000,000; National Defense Committee for Aeronautics, \$29,671,600.

■ Equipment on 1948—Planes operated in 1950 on all types of certificated routes, both domestic and international, will aggregate about 1,099, according to the Douglas study. The 10 planes on the Alaska route will be replaced with 11. Boeing Statesman aircraft, an aggregate of 110 Constellations and DC-6s, 100 DC-6s, 80 DC-4s, in service of Pan American Airways; 100 Convair 240s and Martin 2-0-2s and 18-3s, and 230 new DC-5 replacements.

Additionally, consolidated all-cargo services in 1950 would have 53 phenom-10 C-46s, 50 DC-3s and 25 new long-haul cargo plane Fentons are seen with 304 planes—50 DC-3s, 26 other small transports and 10 Helicopters transports U.S. fleet international and transoceanic routes in 1950 would have 380 planes—40 Stratoformers, an aggregate of 80 Constellations and DC-6s, 30 DC-4s, and an aggregate of 70 Convair 240s and Martin 10-2s and 30-3s.

C. W. France Joins Parks Air Transport

Charles W. France, until recently vice president in charge of maintenance and engineering for Eastern Air Lines, has joined Parks Air Transport, Inc., vice president in charge of maintenance and traffic.

He has now Park's full help activate 2,461 miles of feeder routes in the Midwest. The links presently extend from the Twin Cities and Sioux City on the northward to St. Louis and Indianapolis on the southeast.

Meanwhile, Charles H. DeLoach, operations manager of Delta Air Lines, has been elected vice president of operations

trebling credit losses, and Rockefellers emphasized that every effort is being made to limit the debt to that amount. The entire fleet of new-type Constellations costing about \$16,000,000 has been completely paid for and delivered.

Colonial Files Suit Against Resort Airlines

Colonial Airlines has filed suit in New York State Supreme Court for damages from Resort Airlines, Pleasanton, N. C., and is seeking an injunction to prevent the unlicensed carrier from using the descriptive terms "Sky-boat" and "Superboat" in any of its advertising copy.

The suit asked that Resort be enjoined to account and pay over to Colonial all profits realized from use of the two terms. Colonial said it had used the expressions "Superboat" and "Sky-boat" to identify its services #1 for hire in 1946—only four years prior to their usage by Resort for its all-expense trips.

Investigation Underway On PAA Alaskan Crash

Possibility that clouds with inclement flying or aircraft elevation caused the crash of a Pan American Airways' aircraft en route and investigation of last May's disaster which evicted Western Air Lines' AM-63 from San Francisco to Seattle and Fairbanks.

The accident, in which 11 passengers and five crew members were killed, was the first crash of a long-range commercial plane in Alaska. Residents of the rural Mount Tengier, the site of the mishap, in around 4,500 feet high in the central crest of the 16,000-foot range. The PAA plane hit the peak about 200 feet below the summit.

Jobs Stable

Employment in aircraft industries during the first six months showed little change from last year, according to the Bureau of Labor Statistics.

Aircraft and parts plants—the 140,700 employed in August and the 129,300 engaged in July, compared with employment of 134,389 in August and 128,600 in July of 1945.

Aircraft engine plants—the 26,700 employed in August and 26,000 employed in July, compared with 27,500 in August and 26,300 in July of last year.

Railroads Attack Airline Subsidies

The Association of American Railroads, in an appearance before the President's Air Policy Commission, has charged that the taxpayers are subsidizing air transportation to the tune of "more than half a billion dollars a year."

It also charged that foreign car-

riers receive similar government sub-

sidies there is a sharp contrast between

its management and ours," the Association declared. "The air industry

is more than 20 years old. It has wit-

nessed the birth of a giant. Its days

of being surprised and baffled should

be terminated."

DELCO-REMY AIRCRAFT ELECTRICAL EQUIPMENT PROVIDES

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DELCO-REMY—WHEREVER WHEELS TURN OR PROPELLERS SPIN



LURIA STANDARD HANGAR CONSTRUCTED FOR NORTH AMERICAN AVIATION CORPORATION AT WESTCHESTER COUNTY AIRPORT, WHITE PLAINS, NEW YORK

LURIA STANDARD HANGARS are available in both carved and gothic-type roofs with clear-span spacings from 60 feet to 200 feet. The rear wings are designed to accommodate all standard makes of planes. By allowing complete freedom of choice in height and in size and type of layout, these Standard Hangars can be adapted to meet any combination of shop, storage and office requirements. All sizes of Luria Standard Hangars are designed in two weightings to meet the load requirements of commercial diameter, and the other to effect the utmost economy for northern climates. Supplementing the Standard line, Luria also proposes to design and furnish Hangars to meet any special requirements.



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U. S. Carriers Retain Bulk Of Trans-Atlantic Traffic

Three American companies handle 75.4 percent of passengers traveling from or to New York in first half of 1947, CAB survey shows.

U. S. carriers which practically monopolized trans-Atlantic air traffic during most of 1946 bring in to the last share of business in the first half of 1947 despite increasing foreign carrier traffic.

A CAB survey shows that traffic for sailing into and out of New York City started from 37,645 on the first half of 1946 to 67,155 in the second half of 1946 and 80,108 during the first six months of this year. The share of total business handled by U. S. carriers dropped slightly from 94.78 percent in the first half of 1946 to 90.67 percent in the first half of 1947 and 89.96 percent in the last four months.

• **Dallo Shipment—**Meanwhile, the portion of ships traveling via American flag carriers held steady at about 99 percent. An increasingly larger dollar shortage abroad may force a larger percentage of long-haul to air freight when the big fleet is available.

• **Proportion This Year—**During the first half of 1947 American flag carriers captured between 75 and 76 percent of all traffic each month, averaging 75.44 percent. Foreign companies took their largest share of traffic (about 30 percent) during October and November of 1946, when TWA plane won its stake.

Of the 80,810 total trans-Atlantic passengers bound in or out of New York during the first half of this year, 33,865, or 42.3 percent, were U. S. citizens. Citizens of other countries numbered 46,137, or 57.7 percent.

• **Europe by Commercial—**While American flag carriers had 75.46 percent of all trans-Atlantic passengers to and from New York in the first half of this year, their share of U. S. citizens making the crossing by air was 81 percent and 69.9 percent was the figure representing their

share of foreign citizens.

The CAB study indicates a possible shift in the European market point to account. Marshall Walker, who is on leave of absence at the time, has been succeeded by Charles A. Gandy, who has assumed command of the Bureau of Aircraft Commerce. At the same time, Louis W. Smith was appointed assistant chief pilot of stations 13 and 63.

The survey also announced intention of Ted Kunkel as traffic manager and Edward L. Hodges as supervisor of maintenance and station service for the island division.

Other personnel developments:

- **Air Corps.** Gen. E. W. Williams, formerly with American Airlines, has become director of operations.
- **American—**W. Trumbull has been appointed director of purchasing to replace W. C. Johnson.

- **Pan American—**Robert M. Mason has been named assistant superintendent of maintenance. He succeeds John J. Gilligan, who has accepted chief pilot in charge of maintenance and aircraft management for the American Presidents and Airlines.

- **Trans World—**Richard R. Nichols, partner in New York, has joined the New York International Aviation Board. He became a member of the board in 1946 and was elected chairman of the board.

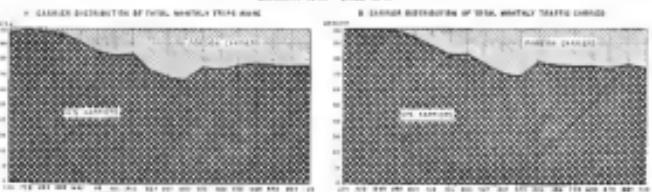
- **TWA—**John T. W. Tilney has been named assistant to Wayne L. Thompson, president of the company's Board of Directors.

• **United—**It appears that George D. Miller has become director of Budget and Research.

Finland Service Opened

An air route between Helsinki and Stockholm by Scandinavian Airlines System opened recently, making the first transnational air route since the end of the war. Daily trips are operated.

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AVIATION WEEK, November 10, 1947

TWA to Request Increase in Fare

With American Airlines still determined to hold the price low, TWA last week became the third transcontinental carrier to plan a fare increase.

E. D. Cooke, vice president-financial, said that in view of rising costs TWA will apply to CAB for approval of a 10 percent boost in domestic passenger tariffs, effective Dec. 12. United Air Lines (Aviation Week, Nov. 3) previously announced its intention to raise fares 10 percent on about 35 routes a mile-long. On Dec. 12, Northwest Airlines "second stage" passenger fare boost went into effect, with

American's Stand—C. H. Smith, chairman of American Airlines' board of directors, and his company would not increase fares at the present time despite the action of other carriers. "We believe the air transportation market can best be handled by keeping fares within the reach of as many potential passengers as possible," he said. "With the air craft available today, we believe American can be operated at a profit on the current fare basis."

In announcing TWA's fare increase President W. A. Patterson and the construction price of planes had soared 61 percent and wages had advanced 50



KLM TERMINAL IN THE HAGUE

KLM has opened the 75x35 ft. waiting room in the new airbase terminal in The Hague, as well as the Dutch operating unit at the first building especially designed and built as a native terminal in Europe. KLM soon will put into service a fleet of 16 Convair coaches to carry air passengers from Schiphol Airport to Rotterdam, The Hague, and Amsterdam.

percent since last year. "New construction of ground facilities to handle today's volume of business costs two to three times as much as in the pre-war period."

U.S. Record—Patterson noted that United did \$59,363,119 worth of business in 1946, up 350,000 in 1945. Last year the company did \$64,549,159 worth of business to earn \$1,006,961.

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Bosch Facilities Pushed To Fill TWA Requirements

HOMESTEAD—Construction of quantitative facilities at Santa Cruz Airport here is being pushed at top speed in order that TWA's season from the U.S. and Europe can get off their Kielce strip as soon as possible.

The project has been hanging fire for months, but the need is imperative for TWA's to get off at Kielce. An aircraft and landing permit was issued though it was supposed to fly directly to Roskilde from Roskilde to Kielce.

The quantitative facilities are only a small step in overall plans to make Santa Cruz a first class international air port. But work has yet to get underway in efforts to extend and strengthen runway, construct a new administration building, and expand facilities generally. The end of next year probably will be the moment any of these items will near completion.

Other minor Indian aviation developments:

- A flight on Oct. 9 made the first Cessna flight into New Delhi's Washington Airport. The stop was a special one to pick up a Douglas liaison for Indian Airlines. The liaison, held at the RAP's Police Agency, Lucy Field Airfield, flew the city. The Cessna flight was carried under a permit of a temporary exemption against Dutch aircraft which was statutorily a permit against Dutch planes in Java.
- Indian Airlines, based at New Delhi, received heavy increases in all operational categories in a recently issued report covering the year ended June 30th. In the preceding 12 months IANA carried 10,949 passengers and 702,718 lb. of freight on scheduled flights covering 2,127,508 miles in 13,672 flying hours. Increases were the basic passengers, up 77%, freight, 40%, mileage, 95%, Enroute passengers, 85%, total ton miles, 100%.

A. K. Bhattacharya, using a small part of the budget between India and Pakistan in discussion of the precisely site of Jamnagar, between Bombay and Karachi on the Arabian Sea. Pakistan has reached through a cross-day service to Jamnagar with a DC-3 in an attempt to cover relations and step up communications, for it has no land access to the state.

KLM to Berlin

KLM Royal Dutch Airlines started Amsterdam-Berlin flights recently with a round trip via Munich. They will be followed by Hamburg on the Amsterdam-Copenhagen route with an intermediate stop once a week. These weekly services to Frankfurt started last month.

New Phone Link

Two way telephone service between Northwest Detroit drivers to place and stay on the ground and be relieved to an enroute point you under a plan proposed by the American Telephone and Telegraph Co.

With the place's cabin attendants at clothing in a "uniform" who places the call, the passenger would be able to go to the telephone station at the terminal and speak to his office or home over a telephone linkup. Amatronic Radio, Inc., soon will appear before the Federal Communications Commission on behalf of the airline to obtain Government approval.

To be determined by airline, telephone service would be provided with charges, a planned call involving similar equipment, Call-E-Sign, and NVA-1 management of general and account accounting. If no change of the project, states that the new phone setup would be confined to U.S. flights because the range of very high frequency communications is limited to 60 miles. Places at sea would be out of range of land stations.



GALLERY MOCKUP

United Air Lines employees at Chicago are learning to use a new type of aircraft loading device with a feature unique to the field of cargo which will be installed in UAL's Boeing 707s, seven of which are to be delivered starting next spring. Design and source details have been worked out in these auxiliary parking during which time it is loaded into the plane. A luggage compartment is used for the purpose. When the plane is parked, the door which contains the pallets down, and operations are made by the employees to remove the aircraft.



Robert W. Prentiss, left, president of the Flying Tiger Line, is shown demonstrating the new mobile security telephone used by his company for the protection of its aircraft. Center, John Gutfreund, chairman of the company to call in the FBI if the seal is broken by an unauthorized person. Right, O. Trapp, center, holds a pouch of seals. Von C. Miller of the carrier's security division is at right.

staples a metal seal, causing it to burst. Under company regulations, only the captain may break the seal en route at the flight's destination. The captain signs sealed boxes containing throughout a trip the place, date, and reason for breaking and removing a seal. Both enroute and terminal seals are returned to the company security office for final evidence of company protection of a given shipment.

ALA President Defends Operations

American International Airlines, operator of the Boeing 747 flying boat which was grounded down to mid-Atlantic Oct. 1, has been denied CAB clearance that the company violated the Civil Aviation Act.

ALA's letter of application as a non-scheduled air carrier was suspended by the Board after the accident (Aviation Week, Oct. 27), and the company was ordered to show cause why the letter should not be withdrawn permanently in an reply. American International said it had never operated in a common carriage basis absent as a contract carrier.

• **CIAA.** CIAA-Airline—The company stated it had been informed by CAB that a non-scheduled air carrier operating certificate was not necessary for cargo type of activity. "If we wanted to do it, we could do it," says under contract, "but why did you want to tell us we can't?" Robert W. Prentiss, president of the Flying Tiger Line, the using of cargo doors with unprinted metal sealing tape has shown a two-fold benefit. Under intricate insurance regulations, discovery of a broken seal on a cargo door authorizes the FBI to investigate. In addition, the Flying Tiger cargo insurance premium on flying policies have been cut 40 percent.

• **Reason for Action.** Responsible for the cargo sealing experiment is Vito G. Di Stefano, vice president, manager of the Los Angeles office. Di Stefano, who was hired by Prentiss last February to set up a security department to help a mounting toll of in-transit cargo thefts.

Between Jan. 1 and the inauguration of the cargo sealing program, pilferage losses total \$33,000. In comparison with shafts and unprinted seals, Miller's department cost 40 percent to nil. Theft of sealing cargo doors, not one theft of freight has been reported.

• **Captain Responsible.** Success of the cargo sealing is primarily the responsibility of the captain of the plane. He signs for a package containing a record book in which he logs the disposition of individual units assigned to him. Upon the completion of loading, he locks the cargo door and also runs through the

plane's internal load to less than 60 knots. When 25 miles past the Bobb

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with hundreds undamaged, the crew estimated it had 41 hours of fuel remaining, when the craft of New Bedford was 52 hours away. The decision was made to turn back in the hopes that some fuel could be found at an ocean landing without nearby aid.

CAB Lifts Suspension On 7 More Noncharters

Seven more unchartered airlines among the 47 that last year lifted all regulations on unchartered carriers last month have received CAB action.

Airline operations already suspended by the board are: National Air Transport, Inc., Teaneck, N. J.; Southwest Century Air Lines, Inc., Charlotte, N.C.; Styron International Trading and Transport Co., Miami; Coastal Cargo Co., Telephone, N.J.; Chesapeake Airways, Salisbury, Md.; Transocean Air Lines, Oklahoma City, and Caribbean American Lease, Miami; International Air Freight, West Palm Beach, Fla.; previously had its suspension lifted after long, cautious trials and reports in compliance with section 291 1 of CAB's Economic Regulation.

Swissair Gets Permit For Atlantic Route

Swissair, Swiss Air Transport Co., Ltd.—has received a license to operate from CAB authorizing service between the co-trunked Geneva and Zurich, Switzerland, the nonstop route Paris-Sharmis, Eto, Strasbourg, the Azores, and Carter, Newfoundland, and the terminal point New York City.

Swissair's only international air carrier, Swissair expects to operate one DC 4 roundtrip monthly via the North Atlantic route.

CAB SCHEDULE

Sept. 18—Huntington Airlines are granted permission to begin operations on the Boston-Baltimore-D.C. 4 service.
Sept. 21—

Sept. 18—Oral agreement on TWA's proposal to increase intercarrier agreement.

Sept. 18—Oral agreement to Boeing's proposal to increase intercarrier agreement.

Sept. 18—Oral agreement to Pan Am's proposal to increase intercarrier agreement.

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SHORTLINES

► California Eastern—Will continue as an independent freight carrier, all domestic and foreign cargo. San Jose, Newark having ended. Company recently added a fifth B-34 to its fleet. Alvin P. Adams, chairman of the board of directors, has taken over active direction of the firm following the resignation of J. J. O'Brien, president. — Freight ton miles in the first half of October total 673,697, up 15 percent over the same period in September when the company earned a profit.

► Delta-Air has formally opened its new general offices and shop at Atlanta, Ga., Municipal Airport. The expansion, costing \$100,000, move then doubled the company's former plant and office facilities at the field.

► Flying Tiger Line—During the quarter ended Sept. 30 reported \$113,300 operating profit. President Robert W. Stevens warned stockholders the company should not be taken as a criterion of long-term value, a company's value has declined considerably due to completion of government contracts. — Mid-Continent Report \$47,946 net profit in September after taxes compared with \$51,825 in same period last year. Company's oil profit after taxes for first nine months of 1947 was \$47,571. Revenue passenger miles in September, 1947 totaled \$148,651 and load factor was 65.85 percent compared with 7,772,379 revenue passenger miles and 74.93 percent load factor in September, 1946.

► Pan American—Has signed an intermediate freight and express agreement with United Air Lines.

► Shad-Plex, 2,131,021 ton miles of freight in the first 27 days of October compared with 2,596,000 in all of September. Load factor in the 29-day period was 91.7 percent against 83.5 percent in September. Company personnel report October load factor will equal the September rate of 91.590.

► Trans-Canada—Reports to have 10 DC 4M purchased entirely by year-end. First five planes, built by Canadair, Ltd., Montreal, will go into domestic operation and the remainder on the North Atlantic routes. Another 10 DC 4Ms are to be delivered next year.

► Domestic traffic will have 49,784 passengers in August to 45,000 in September.

► TWA's North Atlantic service was cut back to 15 trips weekly (14 passenger and one cargo) effective Nov. 1. Service to Cleveland, Milwaukee and Zanesville, Ohio, Richmond, Ind., and Peoria, Ill., was inaugurated early this month.

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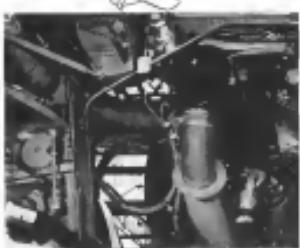
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EDITORIAL

Wake Up! Banish Stalls

Airlines take pride in its youthful conception to new ideas. But if you descend to any intelligent observation from another more staid, settled field of transportation that we have a device that might prevent so many as fifty percent of our accidents which we aren't exploring, we would not believe it.

Growing importance of some of us in aviation to accept the inevitability of change for the better is more than disheartening. It speaks of a persistent hardening of the arteries that can threaten our economic life in that business. Some of us are acquiring a blindness to facts even when they slip on us the face—or the bank account.

The best example we know in the cold, fairly static light airplane marketplace is giving a reasonably effective and foolproof gadget developed by Dr. Leonard M. Greene and the CAA, known commercially as the Safe Flight Indicator, believed to be the only automated stall warning device on the market. Some insurance firms already encourage its use.

Administrator Wright's Non-Scheduled Flying Advisory Committee at its last meeting adopted unanimously a resolution presented by William Anderson of the Pennsylvania association group. It urged that a still warning indicator be made mandatory on all aircraft.

And no wonder. For years close to half of the toll in non-passenger operations have resulted from accidents caused by stalls and spins. The latest report of 1957 accidents is running true to form. The first thousand analyzed by CAA caused 90 deaths. Exactly half, or 45 deaths, were due to stall or spin accidents. Several other analyses of undetermined cause might well have involved these fatalities. Two other deaths were in accidents of the landing and takeoff category, where stalls and spins are often involved.

Yet, generally speaking, makers of planes which can and will are registering unapostolic over the committee's recommendation. It is true, indeed, that the idea should have been born first. But pride is hardly a valid argument against strong laws. There is also heard the argument that installation of a stall warning indicator is an acknowledgment by the manufacturer of his product's inferiority. Suchy, the manufacturer himself doesn't even swallow that. There are too many motor cars with

non-stall trim, shatter-proof glass, four-wheel brakes and turn-to-top-to-breakaway steering on that one.

Then you will hear a few of those hardy, unenriched know-all pilots of the old bpha school say they wouldn't get caught alive with one of those new fangled things because they dictat stalls by the seat of their pants or whatever. As far as we know, the seat-of-the-pants on flying is still rather extroded in these days of GCA, ILS, traffic pattern etc. Besides, time has shown that the most experienced pilots sometimes fall even to stall in approaching stall. Students trained with indicator-equipped planes appear still consciousness much earlier than other trainees. But these few men who refuse to down their pride are either unimportant in the aggregate and if ascent is equipped with indicator in the first place they will fall in line.

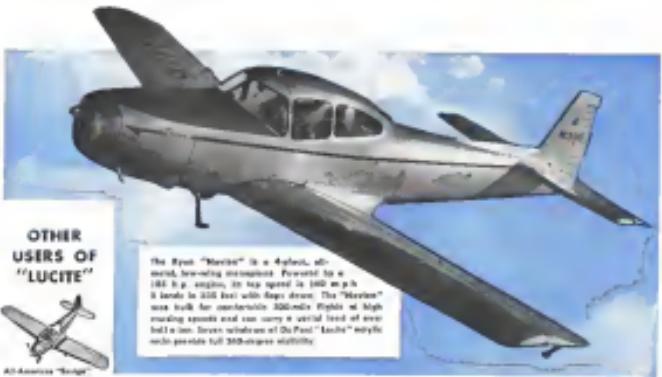
About 1,300 personal aircraft now carry the stall warning indicator. So far, according to Dr. Greene, it has never failed yet. Its weight is down enough so that it involves no sacrifice of performance. Its cost is trifling.

Consolidated Vultee is installing it on the Convair Lancer transport. The Air Force sees tremendous potential value in military training, where accidents due to stalls and spins took hundreds of lives. It has also installed as indicator on the experimental jet fighter. The Navy sees no end that will prevent carrier pilots to make approaches at lowest possible flying speed.

"It is conceivable that the ultimate answer will be two indicators on carrier planes, set to bracket the desirable approach speed," one spokesman for Dr. Greene reports. "Our indicator can be set to buzz when the upper limit of desirable approach speed is reached, with a second indicator set to warn when the absolute minimum safe speed is reached." The device takes into consideration the following stall speeds produced with varying power settings, flap positions, or landing gear positions:

As long as we build aircraft that will stall, the case for adding stall warning indicators to every one of them at the factory seems so strong as to be overwhelmingly arguments. If industry is not alert enough to take the initiative on this subject as public safety, the government should require such a device on every commercial aircraft built.

ROBERT H. WAGGONER



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Type in the Post "Consolidate of America" Monday, 8 P.M., 525, 600.

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